NETWORK WORLD

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Leaders of the PACs

Key Republican congressional telecommunications legislators and total contributions from telecommunications-information-entertainment industry political action committees.

Rep. Jack Fields
Chairs House Telecommunications Subcommittee. Rakes in more than $73,000 from 26 contributors.

Rep. Tom Bliley
Chairs the House Commerce Committee. Lands $23,200 in contributions, including $10,000 from AT&T.

Sen. Larry Pressler
Chairman of the Senate Commerce Committee. Pulls in $13,500, mostly donations of $2,000 or less.

Sen. Bob Packwood
Heads up Senate Communications Subcommittee. Picks up $7,000 in PAC contributions.

See page 56 for detailed chart of key contributors to Republican telecommunications legislators.

Telecom reform on the money for GOP backers

BY ALAN PEARCE

Republican leaders in Congress this year are laying a foundation for telecommunications reform that will likely foster competition by curbing regulation. But it also will benefit deep-pocketed supporters who contributed to key legislators' campaigns.

Republicans, who now control telecommunications subcommittees in the 104th Congress, are floating a bill authored by Sen. Larry Pressler (R-S.D.) that would open up the local exchange to greater competition, allow the regional Bells into manufacturing and abolish long-distance restrictions on the Bells, among other things.

The central theme is deregulation; the guiding principle of the Republican leadership is that capital gravitates toward innovation, and innovation is nourished in markets that are competitive and less regulated.

Political action committees (PAC)

See **Reform,** *page 56*

IBM to blend ATM, routing

BY MICHAEL COONEY

Raleigh, N.C.

IBM is expected to announce by June its first Nways ATM access device with integrated routing functions, a product designed to let users meld ATM and legacy LAN environments.

The company said its low-end Asynchronous Transfer Mode access node, the Nways Model 200, will include router technology from Proteon, Inc., a move analysts said may help IBM regain some of the control over enterprise internets that it has lost to competitors.

"IBM realizes it needs more function in the products it expects customers to use at the edges of ATM networks," said Charlie Robbins, director of communications research for the Aberdeen Group, Inc. consultancy in Boston.

The Nways 2220 Model 200, which will have six slots that can support a variety of local- and wide-area ports, can be positioned as an ATM feeder node. It is expected to support at least one 155M bit/sec ATM card that would tie it to a larger

See **IBM,** *page 8*

NEWSPAPER $5.00

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Novell making remote users feel more at home

BY KEVIN FOGARTY

Provo, Utah

NetWare users have begun beta-testing an overhauled version of Novell, Inc.'s remote LAN access software that they say is easier to administer than previous releases, offers new connectivity options and supports faster remote links.

NetWare Connect 2.0, which just entered beta and is due to ship this summer, is a server-based modem control application that lets users dial out from a LAN or dial in to establish remote client connections or control workstations on the network.

Early users said the new version features Point-to-Point Protocol (PPP) and Serial Line Internet Protocol (SLIP) support, which lets remote devices communicate with NetWare servers using a range of protocols. Version 2.0 is integrated with NetWare 4.1 and its NetWare Directory Services (NDS), and provides greater throughput by supporting so-called burst-mode packet transmissions.

NDS integration means that a remote user dialing in to a NetWare Connect server will not be limited to accessing a single server but will have the same access rights as when working at a directly connected desktop. Network managers can also administer remote user rights centrally and maintain user information in

See **Remote,** *page 55*

NetWare Connect 2.0 attractions

- Supports packet bursting.
- Adds PPP and SLIP connections.
- Works with third-party authentication products.
- Adds GUI-based tools for configuring and administering NetWare Connect servers, end nodes and modem pools.
- Supports NetWare 4.1, NetWare Directory Services, and NetWare Management Services and other SNMP-based systems.

Note: Version 2.0 is in beta and is due out this summer.

Microsoft opens Win95 to nets

BY PEGGY WATT

Redmond, Wash.

Microsoft Corp. this week will unveil an open application program interface (API) designed to make its upcoming Windows 95 operating system fit easily into network environments.

The firm's new Network Provider Architecture (NPA) API will give software developers, including network operating system and TCP/IP stack vendors, a common way to build links to Windows 95 desktops. The new API is similar to other Microsoft interfaces, such as its Open Database Connectivity and Telephony API, although NPA is more general-purpose.

Windows 95, expected to ship in August, is based on a 32-bit architecture that will let users access multiple NPA-compliant network environments via a single logon. Communications will be established under a protected mode, meaning if a personal computer acting as a client on two different LANs loses a link to one, its other connection would be saved.

Banyan Systems, Inc., Digital Equipment Corp. and FTP Software, Inc. are among the first vendors to support the new API.

"Microsoft is building the well-

See **Win95,** *page 57*

Will Justice prevail in case against Microsoft? Page 6.

STEVE BORNS

Dow Jones Telerate's Michael Jones

Norton-Lambert's Close-Up proves speedy remote control doesn't have to be Windows-based. Page 41.

Dow Jones trades up to frame relay

BY MICHAEL CSENGER

Jersey City, N.J.

Dow Jones Telerate has taken its first steps toward building a fully meshed hybrid frame relay/TDM net that will blanket the globe, bolstering network reliability and providing cost savings.

The 83-node net will support delivery of the financial news and market data the company ships to subscribers in more than 80 countries. The firm's services cover bond and equities markets, currency exchange and commodities trading, among other things. Its clients run the gamut from high-end financial trad-

See **Dow Jones,** *page 55*

Briefs

Cabletron, 3Com to air ATM plans. Cabletron Systems, Inc. next week will announce a series of new Asynchronous Transfer Mode products. The products, developed with Fore Systems, Inc., will include an enterprise switch for the Multi Media Access Center (MMAC)-Plus, as well as access products for the MMAC and MicroMMAC hubs. Cabletron will also announce Spectrum management tools for monitoring switched nets and traditional LANs. The new ATM products will ship within 90 days.

3Com Corp. this week will discuss name changes for its NiceCom product line and how it fits into 3Com's overall ATM product strategy.

Hacker zapped. Federal officials last week arrested alleged electronic bad boy Kevin Mitnick on charges that he went on a hacking spree across the 'Net. Mitnick, who already had one conviction for electronic break-ins, was arrested on charges of illegal use of a telephone access line and computer fraud. Officials charged that he broke into a variety of corporate networks, as well as systems used by public access providers Netcom On-Line Services, Inc. and the WELL, both in California. Mitnick was arrested after an investigation aided by Tsutomu Shimomura, a San Diego physicist and network security specialist whose ire was raised on Christmas when somebody, apparently Mitnick, used a technique known as IP spoofing to break into his machine (*NW*, Jan. 30, page 1).

NYNEX tunes into Cablevision. NYNEX Corp. has signed a local-loop interconnect agreement with competitive access provider (CAP) Cablevision Systems Lightpath, Inc. of Woodbury, N.Y. — the first such agreement between a regional phone company and a cable TV provider. The CAP, which has 977,000 CATV customers in NYNEX territory in and around New York City, plans to roll out phone services next year.

A Memo on Notes. Lotus Development Corp. and Verimation AB last week said they are working to integrate their groupware applications: Lotus Notes and Verimation's Memo. Initial plans call for Verimation to build an application program interface through which Memo clients can serve as Notes mail clients and which will let the two applications exchange and synchronize messages, attachments, calendars and forms. No date was announced for an initial product offering.

Unix unity. X/Open Company, Ltd., the steward of the Unix specification code and trademark, next week will announce a new version of the spec and a program designed to get Unix vendors to standardize on it. Under the new branding program, only Unix operating systems that adhere to the Single Unix Specification — an update of Spec 1170 — will be able to brand their products as Unix.

Novell WebWare? Novell, Inc. plans to release in September a NetWare Loadable Module (NLM) that will let a NetWare server double as a World-Wide Web server, according to sources briefed about Novell's plans. The NLM will ship with LAN Workplace 5.0, an enhanced version of Novell's TCP/IP application suite, which will also include a Web browser from NetScape Communications Corp.

Novell: (800) 638-9273.

AT&T takes a hike. AT&T this week is expected to file for an average 2.9% price increase on a range of business calling plans, including its Software-Defined Network, Megacom, Megacom 800, OneNet and UniPlan offerings. The hike will affect mostly short-haul and off-peak calls, as AT&T moves to a rate structure where prices are less sensitive to distance and time of day. As justification, the carrier will likely cite investment costs for services such as Network Notes, NetWare Connect Services and WorldWorx 800.

Beating Windows 95 to the punch. IBM in August will launch OS/2 4.0, a version capable of running Windows 95 and Windows NT applications, according to a story in *Computerworld Norge*. IBM has moved up the release date so that it can steal the attention expected to surround Microsoft's launch of Windows 95. One industry analyst said it is more likely that IBM will launch OS/2 4.0 in beta in August. IBM declined to comment.

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networks expo

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Network HELP desk

Network World *tracks down answers to your questions regarding products, services, technologies or disputes with vendors. Please submit questions to Alison Conliffe by phone at (800) 622-1108, via fax at (508) 820-1103 or (508) 820-3467, via the Internet at aconliff@world.std.com or via CompuServe at 75471,2725.*

Our network consultant has recommended Futurus Corp.'s Futurus Team Combo Version 3.52 as the electronic mail package when we go to a 100-user Novell, Inc. NetWare LAN. We have an older version now running on one of our smaller LANs, so we qualify for upgrade pricing.

Can you offer any reviews or opinions about this product?

Bob Meehl, St. Paul, Minn.

Ron Cooney, a technical analyst with Paranet, Inc., a network services provider based in Houston, replies:

Futurus Team Combo is a good E-mail solution for small, low-traffic networks with minimal administrative needs. The product's feature set is basic and easy to use — a big help for the tedious task of maintaining a system.

Features like inserting files, creating pick lists and address lists, basic cutting and pasting, making boilerplate text, sending and forwarding messages, and printing are all included in the basic package, and are easy to set up and use.

However, be aware that Version 3.5X doesn't work with IBM's OS/2, Unix or Apple Computer, Inc.'s Macintosh OS but only with Microsoft Corp.'s Windows 3.1 in a Novell environment. As with any software, check the track record on timely bug fixes and new releases and whether these work on all required systems. One thing to remember is that Futurus doesn't support cross-platform electronic messaging. If your future network requirements call for Internet access or access to an X.400 gateway, then Lotus Development Corp.'s cc:Mail or Microsoft's Microsoft Mail might be a better choice.

However, if your E-mail requirements are for a LAN-based-only communications system to support your internal customers, then Futurus Team Combo is an excellent choice.

My company is looking for a way to improve coordination of workgroup efforts in managing

See **Help desk,** *page 34*

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AT&T, BellSouth fuel outsourcing mania

BY JOANIE WEXLER

The outsourcing market is filling up fast with vendors making lofty — but vague — promises about the networking responsibilities they will assume for users.

The latest rumblings came last week from AT&T and BellSouth Corp. Bandying about familiar "end-to-end solutions" rhetoric, AT&T spun off a new business unit devoted to designing, building and managing customers' enterprise nets.

The formation of AT&T Solutions, headed by Victor Millar, formerly of Unisys Corp., melds integration efforts that, until now, have been spearheaded separately by other AT&T divisions. What's new is a more internally unified approach.

AT&T said the new entity will serve 105 customers, including Great Western Bank, FSB (see story, page 4), First National Bank of Chicago and The Chase Manhattan Bank, N.A., plus a $1 billion backlog in contracts — all drawn from existing AT&T outsourcing deals.

AT&T Solutions said it will offer technology and business consulting, systems integration, and information technology management and operations services. It purports to offer data center management, although analysts said that will not likely be an AT&T forte.

The company has offered these services before via subsidiaries such as AT&T Global Information Solutions, AT&T Network Services and AT&T Network Systems.

Also last week, BellSouth joined the ranks of Bell siblings US WEST, Inc. and Bell Atlantic Corp. with its formal entry into the network integration business.

The new BellSouth Network Services (BNS) is an unregulated subsidiary that could be an AT&T competitor within BellSouth's nine-state region.

SORTING IT OUT

While users generally operate under the credo that more choices are better, the distinctions among what the various companies actually do are hazy, and it is getting difficult for users to sort out vendor strengths and weaknesses.

Daliah Amar, BNS vice president and general manager, for example, described her firm as "something between a consulting company and a systems integrator" but would not specify anything that the new subsidiary *wouldn't* do for a customer.

In fact, nearly all vendors in the integration business hesitate to tout anything but soup-to-nuts services for fear of losing a bid. A notable exception is Hewlett-Packard Co., which flatly states, "We don't do mainframes or other proprietary computers."

This situation leaves it up to the user to start unmasking a given provider's particular strengths (see graphic).

Analysts have some advice.

Jeff Kaplan, director of Dataquest Worldwide Services Group, a research firm in Framingham, Mass., advised that customers first identify what they are trying to achieve from a business perspective, determine the strengths of existing staff and research where network outsourcing will yield the best return on investment.

The last exercise can be tough since outsourcing contracts are all custom deals, and there is no upfront way to contrast pricing, pointed out David Passmore, president of Decisis, Inc., a Herndon, Va.-based consultancy. "It's hard to get your arms around what everyone is offering. There is a lack of differentiation."

Passmore suggested that users rely on a vendor's track record. Companies without a history with a vendor should check with firms of a similar size and in the same vertical industry that have worked with the vendor.

Another thing to think about is how dynamic your particular environment is, Passmore said. For example, companies in transaction processing businesses — such as retail and banking — which have many similarly configured remote branches, might be good outsourcing candidates because such environments are fairly static.

Users will find specialists if they do their homework.

For instance, in the transaction processing example, ACSYS, Inc. might be a vendor candidate, as it has chosen remote site monitoring as its focus.

But analysts caution against turning to the regional Bell operating companies for desktop data assistance. "These people are Bell-heads with a voice orientation," Kaplan said.

However, BellSouth's Amar said she has hired 75% of BNS personnel from outside companies, rather than relying only on BellSouth expertise.

Outsourcing yellow pages

A sampling of players and their main focus:

ACSYS, Bedford, Mass.
Remote site LAN and desktop application monitoring

Advantis, Schaumburg, Ill.
Corporate WAN, interenterprise networking and integration, and electronic commerce

Andersen Consulting
Business process reengineering, network integration and project management

AT&T Solutions
Enterprise-level network integration

Bell Atlantic Network Integration Services
Regional WAN integration and monitoring

BellSouth Network Services, Atlanta
Regional WAN planning and integration

EDS
WAN management services, data center management and electronic commerce

HP
Client/server deployment and management, from the router to the desktop

IBM's ISSC
Data center

MCI
Limited managed WAN services

US WEST's Interprise Network Services Group
Regional LAN interconnection and integration services focused on small to midsize companies

Bank calls on AT&T for giant frame relay net

BY DAVID ROHDE

Northridge, Calif.

One of California's largest financial institutions is building what may become the nation's largest frame relay network, banking the future of its critical customer applications on AT&T's new outsourcing unit and the carrier's InterSpan frame relay service.

By November, Great Western Bank, FSB, will dump its leased-line network and roll out frame relay links to 528 full-service bank branches and another 200 lending offices in 23 states. The bank is turning over management of the entire net — LANs, WAN and applications — to the newly formed AT&T Solutions.

Despite its size, the star-configured network features a simple design. Branch offices, equipped with Cisco Systems, Inc.'s 4500 series routers, will each be assigned a 56K bit/sec port at the nearest AT&T frame relay point of presence. Each node will run primary and backup 56K bit/sec permanent virtual circuits (PVC) back to headquarters here.

Since the network will be used primarily for transaction processing rather than large file transfers, the modest port and PVC speeds should easily handle the load, said Brian Carey, an independent consultant who advised Great Western on the project.

In fact, the committed information rate — or guaranteed throughput — on most of the PVCs will be just 32K bit/sec for all but about 50 of the branches.

The branches will not be connected to one another since they don't need to be. Most of the bank's applications — for deposits, loan origination, automated teller machine personal identification number verifications and others — key off customer data housed in host IBM or Tandem Computer Corp. computers here. Tellers use personal computers on token-ring LANs running Novell, Inc.'s NetWare 3.11.

PRODUCTIVITY GAINS

The frame relay network promises some big gains in productivity. For example, using frame relay, as well as an enhanced application, will cut response time for deposit transactions from 7 to 10 seconds down to 1 to 3 seconds in peak hours.

Loan officers also will benefit. They now handle loan originations over 3270 sessions and have to follow up with paper applications. In the future, loan officers will be migrated to the LANs so they can transmit application data over the frame relay net. That will cut response time and reduce the paperwork.

There will be some big data dumps when the bank implements a software distribution system designed to download updates to some 6,000 teller workstations. But the operation can be done during off-peak hours to minimize the impact on the network.

Great Western sent out a request for information on the new network in December 1993 to eight vendors, including major carriers, two outsourcing firms and a hardware manufacturer other than AT&T.

AT&T's Integrated Solutions Organization won the deal, but that unit and the Accumaster Management Services, Network Management & Outsourcing Services and Government Integrated Solutions Organization have been merged into the AT&T Solutions group.

AT&T was chosen due to its net design — with data frames riding entirely over a 45M bit/sec backbone — and its support capabilities. "AT&T has all the requisite expertise in-house. They would not have to have an extensive array of subcontractors," Carey said.

Among the AT&T project team's responsibilities are upgrading the bank branches' token rings to 16M bit/sec and upgrading the LAN operating systems to another version of NetWare.

Internet Society plans to charge for IP names and addresses

BY ELLEN MESSMER

Reston, Va.

Free IP addresses will go the way of free lunches if the Internet Society has its way.

The society, which oversees Internet registration authorities in the U.S., Asia and Europe, will unveil a plan this April to start charging for registered IP addresses and domain names that are currently issued for free. New registration and maintenance fees could cost TCP/IP network users and service providers thousands of dollars annually.

The Internet Society is bandying about these charges, possibly starting with $50 for a Class C block of about 250 addresses, with an annual $50 maintenance fee. Prices for larger Class A and B address blocks and domain names are being reviewed.

But the most controversial part of the plan may be that it will be retroactive. That means the U.S Internet registry, dubbed the Internet Network Information Center (InterNIC), and other Internet registration authorities will look to charge companies already assigned IP addresses and domain names.

Charging for IP addresses, which are in short supply, makes perfect sense in terms of promoting their conservation, said supporters of the plan. The InterNIC needs a source of income, given that the $1 million annual federal subsidy the organization receives for its work will end in three years.

"I think it's a foregone conclusion that there will be a registration fee and an annual maintenance fee," said Tony Rutkowski, executive director of the Internet Society. "I don't think there's another way of funding these activities."

But opponents argued that the IP-for-fee plan will never fly because a significant percentage of service providers and users with registered IP addresses and domain names will rebel.

Some corporations might decide to return their registered IP addresses to the InterNIC, forcing companies to renumber the hosts on their networks. They will turn to private numbering systems that cannot be routable on the public Internet.

"Many of us are under the illusion, belief, conviction — your choice of nouns — that we have been assigned IP addresses and that those addresses are free," said Eric Fleishman, senior principal scientist and network architect at The Boeing Co.'s Boeing Computer Services.

"We believe they are 'our' addresses, and

See **Debate**, *page 8*

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LEGALITIES

Microsoft antitrust deal in limbo; users divided about it

BY JOHN COX AND PEGGY WATT

Washington, D.C.

The U.S. Department of Justice is trying to salvage its controversial antitrust settlement with Microsoft Corp. by appealing a federal judge's rejection of it. While network managers are watching the case, it is unclear whether Microsoft's practices – and legal scrutiny of them – pose threats to planning and implementation practices.

"I think it would be a step backwards to review the investigation and maybe make it more rigorous," said Michael Smith, MIS director at General Chemical Corp. in Parsippany, N.J. "The home user wants to have lots of choices, but for us poor MIS guys trying to make sense out of the world and get this stuff to work and to meet users' expectations, the only vendor that offers anything long-term is Microsoft, and that's a solution we can live with."

A TOUGHER DEAL

But that's exactly why the Justice Department should scrap the existing deal and negotiate a tougher one, according to Richard Currier, chairman of Strategic Marketing, Inc., a Park City, Utah, consulting company that works with third-party software vendors.

Currier sees similarities between Microsoft's role today and IBM's in the 1970s, when Big Blue was able to set key software standards, such as Systems Network Architecture and CICS, that enabled the development of mission-critical business systems.

But IBM's anticompetitive business practices then were reigned in by an antitrust deal with the Justice Department, and that deal led directly to the growth of a third-party software industry. These vendors supplied a wide range of key products to corporate IS shops and, ironically, were a key ingredient in IBM's success into the 1980s, Currier said.

"The key is whether Justice can contain Microsoft to allow the third-party market to grow while letting Microsoft be the standards-bearer," he said.

Ann Stephens, executive director of PC Research, the Reston, Va., research firm whose data the judge used in his research, said of his decision to reopen the case: "The things the judge is coming up with are not as relevant as other issues. For example, he criticized preannouncing, but Microsoft is hardly alone on this." Customers do not drop everything when they hear about a Microsoft product in development, she added.

"With all this talk about Windows 95, for example, OS/2 Warp was the best-selling product last month," Stephens explained.

But, so far, the drama and controversy are generating more heat than light. It's still unclear whether Microsoft's practices, its role as both an operating system and application software developer, and the evolving character of software and networks are detrimental to customers and the industry.

In rejecting the antitrust settlement, U.S. District Judge Stanley Sporkin seemed to say they are.

"It is clear to this Court that if it signs the [settlement], the message will be that Microsoft is so powerful that neither the market nor the Government is capable of dealing with all of its monopolistic practices. The attitude of Microsoft confirms these observations," Sporkin wrote.

Novell, Inc. is keeping its mouth shut as the firm's chief rival heads back into the jaws of the Justice Department.

Company spokesman Peter Troop last week said he was unable to confirm reports that Novell was one of three anonymous companies that filed a brief that urged Sporkin to disapprove the agreement between Microsoft and the Justice Department.

But the recent events could scratch Microsoft's proposed acquisition of Intuit, maker of the top selling consumer finance program, Quicken. Microsoft proposed a $71-per-share buyout in November 1994, and Intuit's stock dropped to $65.50 after Sporkin's decision.

Justice officials last Thursday said they would appeal his decision and asked the U.S. Circuit Court of Appeals to hear the case within three weeks. Microsoft's legal counsel has joined with Justice in filing the appeal.

THE BATTLE CONTINUES

Filling in the map

PCS AUCTION update

Heavy hitters delved into markets beyond the Top 10 last week. High bids topped $100 million for each of the two licenses in the Atlanta region, with AT&T and GTE Macro Communications out front, and in southern Florida, where PCS Primeco and American Portable Communications led the pack. Total bids stood at $5.7 billion last Thursday, up some $800 million for the week.

Shown are the high bidders for each of the two available 30-MHz blocks in each of the 10 largest markets offered by the FCC. Three markets – New York, Southern California and Washington, D.C.-Baltimore – each have only one block available due to an earlier award.

Round 78, Thursday, Feb. 16

Region	Bidder	Bid (in millions)
New York	WirelessCo	$442.7
Southern California	Pacific Telesis	$405.2
Chicago	AT&T	$372.7
	PCS Primeco	$385.1
San Francisco Bay Area	Craig McCaw	$130.0
	Pacific Telesis	$132.0
Detroit	AT&T	$81.2
	WirelessCo	$78.1
North Carolina	AT&T	$66.6
	BellSouth	$70.9
Dallas-Fort Worth	American Portable Telecom	$71.9
	PCS Primeco	$68.6
Boston-Providence	AT&T	$121.7
	WirelessCo	$127.1
Philadelphia	AT&T	$81.0
	PhillieCo, L.P.	$85.0
Washington-Baltimore	AT&T	$211.8

PCS Primeco = NYNEX, Bell Atlantic, US WEST and AirTouch Communications
WirelessCo = Sprint plus three CATV companies

Bell Atlantic fights FCC to prevent hike in ISDN prices

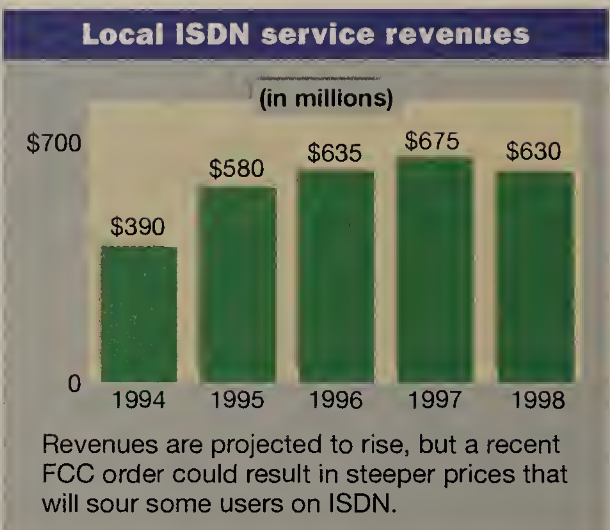
FCC orders billing by channel, not by line.

BY TIM GREENE

Washington, D.C.

The Federal Communications Commission and Bell Atlantic Corp. are locked in a battle that will determine whether all local exchange carriers (LEC) will be forced to increase monthly ISDN line charges.

Local ISDN service revenues



Revenues are projected to rise, but a recent FCC order could result in steeper prices that will sour some users on ISDN.

GRAPHIC BY TERRI MITCHELL SOURCE: INSIGHT RESEARCH, LIVINGSTON, N.J.

If Bell Atlantic loses, it would drive up fixed costs for some flavors of the service by more than 30%.

That could mean yet another setback for ISDN, which is just beginning to show promise after years of limited user interest.

Bell Atlantic is challenging the FCC's assertion that ISDN users should be billed not on the number of physical lines they have, but rather on the number of channels those lines support.

In question is the Subscriber Line Charge (SLC), which the FCC tariffs for all LECs at a maximum of $3.50 for a single line and $6 per line for multiline users.

Currently, the user of a Basic Rate Interface ISDN (BRI) line is hit once with the SLC. If an FCC order issued last month is enforced, the user would be hit twice – once for each ISDN B channel.

Putting a price on ISDN

ISDN service	Monthly charge	Monthly charge under FCC order	Percentage increase
BRI	$24	$30	25.0%
PRI	$450	$587	30.4%

Note: Rates vary by state.

SOURCE: BELL ATLANTIC, PHILADELPHIA

The user of Primary Rate Interface ISDN could be hit as many as 24 times, depending on the ISDN configuration. This is a potential jump of $138 per month.

Eric Paulak, associate publisher at the Center for Communications Management Information, a provider of rate and tariff information in Rockville, Md., noted another problem. If each B channel was subject to an SLC, that would make every BRI user a multiline user subject to the maximum charge of $6 per channel.

Bell Atlantic is protesting an FCC order that denied NYNEX Corp. permission to assess a single SLC for a T-1 line in cases where the entire circuit was used by a single customer's private branch exchange.

The FCC said to do so would violate a commission rule that requires one SLC per "subscriber line," with a line defined as a "communications channel between a telephone station, PBX or TWX station and the central office which serves it."

Bell Atlantic said it would ask the FCC to change its rule to address the ISDN issue directly.

"The commission is rethinking this old rule because it's a new world order in ISDN," said an official in the FCC Common Carrier Bureau who requested anonymity.

The regional Bell operating companies are consulting one another to form a joint position against the FCC order, according to Bell Atlantic attorney Lawrence Katz.

Andrew Kaufman, principal of AHK & Associates, a Schaumburg, Ill.-based consultancy specializing in ISDN network access, calculated the potential impact for three of his customers served by Ameritech Corp.

A customer with a single BRI line would see his fixed charges rise from $32.95 per month to $41.84. A Centrex user with 28 ISDN lines serving 56 stations would see a hike from $790 to $1,125, while a PRI user's fixed monthly fee would increase from $579.54 to $670.40, Kaufman said.

Jeff Fritz, telecommunications engineer for the University of West Virginia in Morgantown, which has 1,600 BRI lines, was likewise concerned.

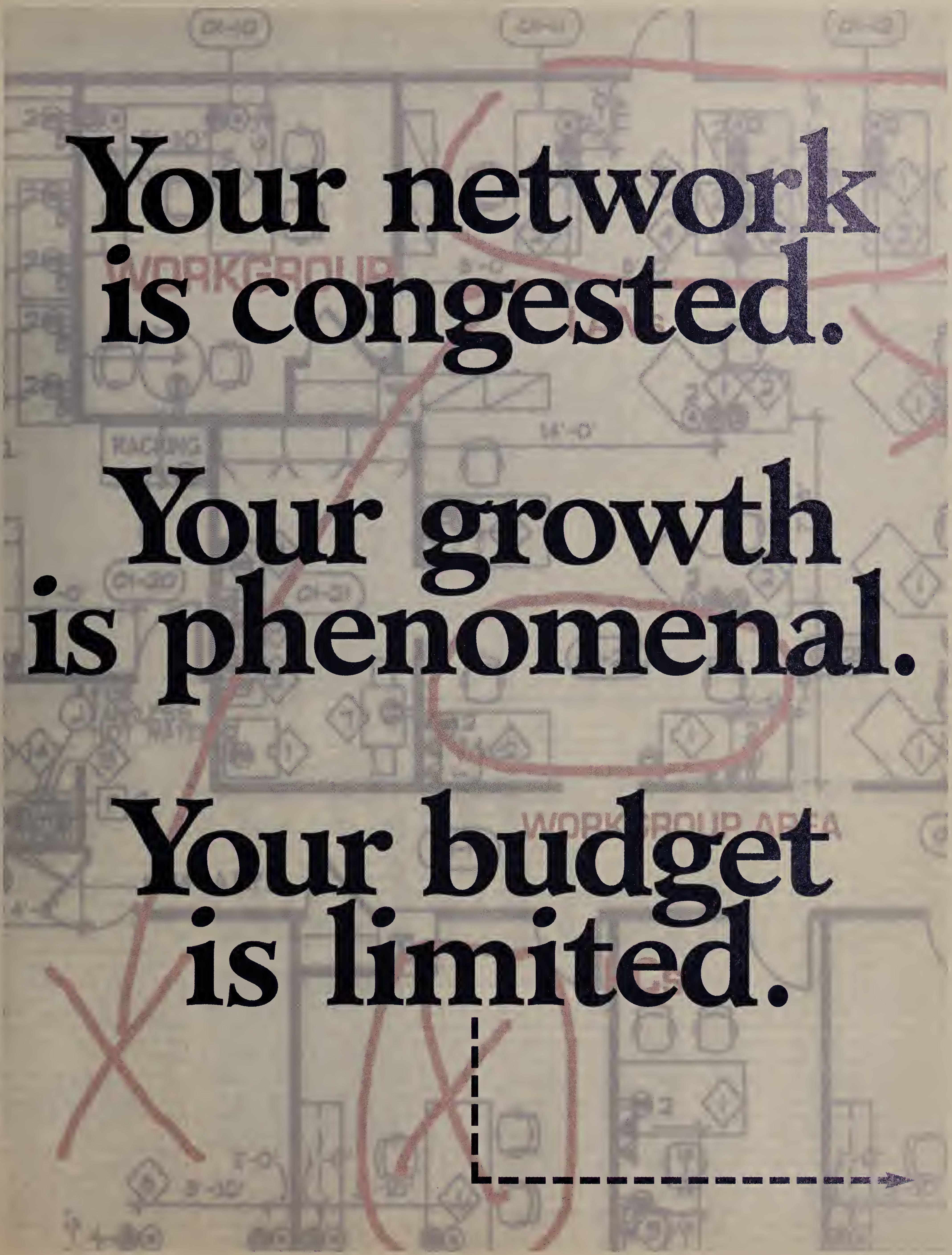
"We've deployed ISDN since 1989, and it's been very, very popular on our campus, primarily because it's been an affordable solution," Fritz said.

"But if the line charges go up, then obviously we would have to weigh that in terms of future deployment ... because we're operating like everyone else these days – on tighter and tighter budgets," he said.

US WEST, Inc. is considering reducing its ISDN rates so users would not be hit so hard.

CORRECTION

The phone number printed for StarWare, Inc. (Jan. 30, page 4) was incorrect. The correct number is (510) 704-2000.



Circle Reader Service #34

Are firms liable for employee 'Net postings?

BY ADAM GAFFIN

Los Angeles

The Church of Scientology last week filed suit in a bitter dispute over Internet postings that raises questions about the responsibility of network managers for policing their end users.

The church sued former member Dennis Erlich, a North Hollywood, Calif., bulletin board system (BBS), and Internet provider Netcom On-Line Services, Inc. for copyright violations.

Hey, who said you could read this?

A sampling of corporate Usenet access policies:

- Employees are given unlimited Usenet access via Serial Line Internet Protocol (SLIP) or telnet accounts on public access servers.
- Company establishes Usenet gateway and limits incoming newsgroups to certain broad categories, such as access to comp. groups but not alt. groups.
- Employees have to ask for access to specific newsgroups, which administrators then monitor.

The church alleges that Erlich used the bulletin board, which relies on Netcom for Usenet connectivity, to post copyrighted church teachings. The church is seeking monetary damages and an end to his postings; Erlich denies the charges.

While this is not the first run-in between the church and on-line detractors, the fact that Netcom and BBS operator Tom Klemesrud were dragged into the lawsuit illustrates that corporate managers have to exercise caution when connecting end users to the 'Net. Network staffers, as well as their employers, could be held liable for postings they had nothing to do with, said Edward Cavazos, a lawyer who specializes in Internet issues with the Houston firm of Andrews and Kurth, LLP.

The disclaimers that many Usenet posters put at the bottom of their messages are no longer enough. "We all grew up feeling what we were doing [on the 'Net] had nothing to do with the legal system in the real world," he said. "The Internet is growing up."

At Chicago-based Playboy Enterprises, Inc., employees are given free rein of Usenet. But they are urged to show restraint in public postings or to indicate they are speaking for themselves, not the company, said Tom Ryan, a graphics technology specialist who helped connect the company to the 'Net.

"We encourage people to use discretion" and to realize that even with a disclaimer, people may still consider any postings to represent Playboy, Ryan said.

ON-LINE BATTLE CONTINUES

In January, a church attorney posted in a conference used by Usenet system administrators a demand that they stop carrying alt.religion.scientology because of alleged copyright violations. Few, if any, system administrators complied. Around the same time, somebody attempted to "cancel," or delete, Usenet messages critical of the church.

Shari Steele, attorney for the Electronic Frontier Foundation, said the case looks more like harassment of critics than a copyright case. She said the suits against Klemesrud's Clearwood Data Services — operator of the BBS used by Erlich — and Netcom, are particularly troublesome because neither is charged with uploading any potentially copyrighted material.

But Helena Kobrin, attorney for the church, said the issue is simply one of copyright infringement. "It is not about freedom of speech or about religious disputes," she said in a message posted on Usenet, ironically from Netcom. "My clients are ardent supporters of the First Amendment and are extremely active in defending it."

Cisco boosts NetWare support in router line

BY JIM DUFFY

San Jose, Calif.

Cisco Systems, Inc. last week unveiled additions to its routing software that will make it easier for users to grow their Novell, Inc. LAN internetworks without straining bandwidth or equipment.

Cisco announced support for Novell's NetWare Link Services Protocol (NLSP) and its IPXWAN 2.0 protocol and introduced a Cisco-developed feature called IPX Floating Static Routes. Combined, the three features are designed to improve the scalability, efficiency and fault tolerance of Cisco routers interconnecting NetWare LANs.

The NLSP is intended to solve scaling problems that crop up in Novell internets using the Routing Information Protocol (RIP) and Novell's Service Advertisement Protocol (SAP). In typical NetWare environments, routers supporting those protocols broadcast routing table updates every 60 seconds, which taxes both the routers and network links.

With NLSP, updates are sent only every two hours or when the network topology changes.

A USER VIEW

NLSP is particulary appealing to Stanford University Health Services, an arm of the school that runs the university's hospital and associated clinics. Stanford Health Services operates a heterogeneous network with some 60 NetWare servers dispersed across the main campus and remote sites, said Robert Tharp, network architect for the health care facility.

"Our RIP and SAP traffic is growing," Tharp said. "When a server is added to the network, the reconfiguration time as the routers change their tables is unacceptable. Anything that would cure this RIP problem looks darned good."

"NLSP is going to be a big improvement for people routing in an IPX environment," said Mary Petrosky, an analyst at The Burton Group in Salt Lake City.

IPXWAN 2.0 support, meanwhile, gives Cisco customers the option of using NLSP over WAN links. It also alleviates the requirement for network administrators to assign a number to WAN links, thereby conserving numbers for IPX subnets.

Cisco's rivals — Bay Networks, Inc. and 3Com Corp. — also support Novell's NLSP and IPXWAN.

However, Cisco developed another feature to add to its NetWare internetworking arsenal. IPX Floating Static Routes defines a static route to be used when dynamic routes are not available. The feature provides a "path of last resort," or backup link, for environments that rely on dial-on-demand routing.

IPX Floating Static Routes is designed to enhance fault tolerance and increase network availability.

NLSP, IPXWAN 2.0 and IPX Floating Static Routes are standard features of IOS 10.3 and will be available in March.

Cisco: (408) 526-4000.

IBM

Continued from page 1

Nways switch, like the Model 300 or 500, and also support X.25, High-Level Data Link Control, ISDN, High Speed Serial Interface and frame relay connections.

The Model 200 will run the multiprotocol routing software IBM licensed last year from Proteon, which supports Open Shortest Path First (OSPF) and OSPF multicasting, Novell, Inc.'s IPX/SPX and other industry-standard routing protocols. IBM also plans to add other technology to the package, such as Data Link Switching, said Jane Munn, manager of advanced routing products at IBM.

"The Model 200 will be the first member of the Nways family to support LAN-attached devices and an integrated router function," Munn said.

The Model 200 is not an ATM switch, Munn added, because it is not based on IBM's Prizma ATM chip. Rather, it will act as a pass-through or concentrator device for ATM LANs needing connectivity to ATM services and route legacy traffic from Token-Ring or Ethernet ports to an ATM switch.

Combining routing and ATM functions in one box will enable users to begin integrating existing LAN applications with emerging ATM services.

It was not clear what routing technology IBM would be using on its larger ATM switches, but analysts said it would make sense for the Proteon technology to show up there, as well. IBM executives last year hinted that they would use their own 6611 router technology in the Nways switches (*NW*, May 18, 1994, page 1), but no solid plans have been announced.

Munn told *Network World* that the Model 200 will run IBM's Networking BroadBand Services (NBBS) software, previously known as BroadBand Network Services (BBNS), so users can connect ATM LANs or devices directly to the Model 200. NBBS enables Nways boxes to allocate bandwidth on demand, control congestion, determine ATM net status and select optimum net routes.

When IBM announced its ATM products last year, it gave no detail about the Model 200, saying only it would have a set throughput capacity of 200M bit/sec — compared with the larger Models 300 and 500, which have a switching capacity of 2.1G and 4.2G bit/sec, respectively. Analysts said that combining the Proteon routing capability with the NBBS functionality will give IBM a strong entry in the edge routing and ATM access environments, where other vendors — like Cisco Systems, Inc. and Bay Networks, Inc. — are setting up shop.

"A routing function is still required within ATM nets, and combining the functions of the [Proteon software] and ATM in one router box that doesn't have the legacy of the 6611 to contend with is a good move," said Anura Guruge, an independent analyst based in New Ipswich, N.H. IBM's 6611 failed to gain much more than a 5% market share, according to most research firms.

"Putting the Proteon software on [the Nways 200] gives it a better class of service and routing capabilities over anything else IBM could have put on it," added David Passmore, president of the Decisis, Inc. consultancy in Herndon, Va.

Comments?

See "How to reach us" on the back page.

Debate

Continued from page 4

attempts to retrieve or charge money for them will probably be met with a legal challenge or ignored," said Fleishman, who emphasized that these were his own views and not necessarily Boeing's.

Many users, however, are expected to accept the IP registration plan matter-of-factly.

The ABCs of Internet addresses

Class A — 16 million hosts

Class B — 64,000 hosts

Class C — About 250 hosts

Internet addresses, which are running low, may not be free much longer.

"In the past, we funded this through our taxes," said Robert Moskowitz, technical support specialist at Chrysler Corp. "In these days of leaner government, what's evolving is that the people using the addresses [are having to] pay for them."

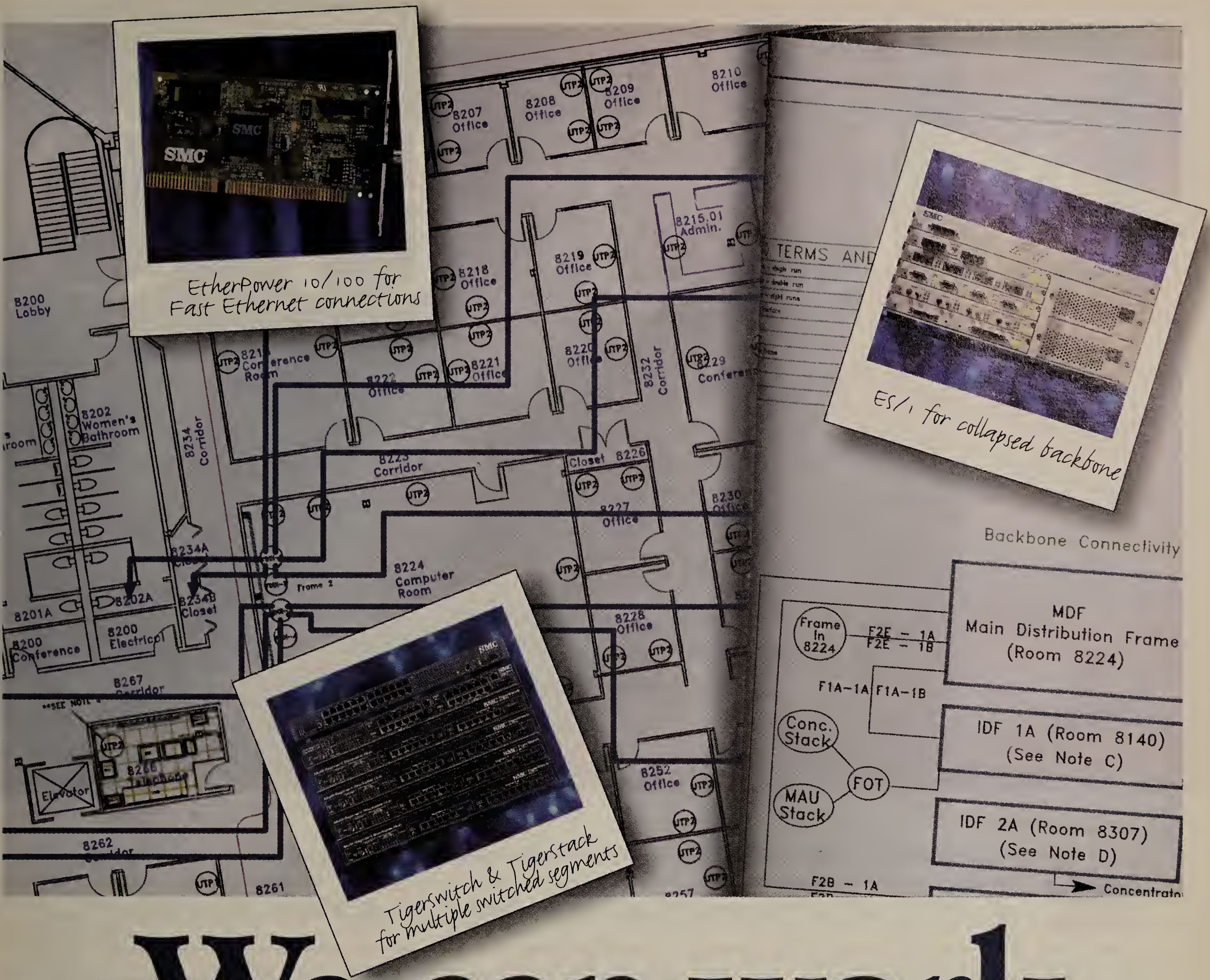
Chrysler uses three Class B address blocks and a large number of Class C blocks obtained from the InterNIC for addressing computers in its network. But the automaker also uses a private IP addressing scheme in some network segments for security purposes and to conserve addresses.

Some service providers, including MCI Communications Corp., showed no opposition to the IP-for-fee plan.

"MCI understands the need to find ways of supporting the administrative infrastructure of the Internet as the federal government ends its long-standing subsidies of this registration function," said Vinton Cerf, MCI's senior vice president of data architecture.

But other Internet providers promised insurrection. While not opposing a small registration fee, Karl Denniger, president of Chicago-based Internet provider Macrocomputer Solutions, Inc., balked at the recurring annual fee and retroactive charges.

"If they send me a bill, I'll say, 'Stuff it,' " he said. "If they try to charge for existing addresses, people won't pay; you'll have the mother of all legal battles.


EtherPower 10/100 for Fast Ethernet connections
ES/1 for collapsed backbone
Tigerswitch & Tigerstack for multiple switched segments
Backbone Connectivity
MDF Main Distribution Frame (Room 8224)
IDF 1A (Room 8140) (See Note C)
IDF 2A (Room 8307) (See Note D)
Frame In 8224
Conc. Stack
MAU Stack
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*Circle Reader Service #***34**

PC MAGAZINE NETWORK EDITION, EDITOR'S CHOICE AWARD "[Windows] NT Server simply provided the best combination of features, usability, a set of full but easy to use management tools, and the simplest and most impressive installation routine of any NOS we've seen." —*PC Magazine, December 20, 1994*

1994 BYTE AWARD OF EXCELLENCE "The new version is slimmer than 3.1. It carries big loads for servers and serious business, scientific and engineering users. Its performance-monitoring and event-logging services are sophisticated." —*BYTE Magazine, January 1995*

NSTL RECOMMENDED PRODUCT "Windows NT Server 3.5 has attained top rankings in all categories of NSTL's NOS evaluation. Windows NT Server's excellent performance, ease of use, and ease of learning features combined with its excellent networking make it a strong candidate for many network environments." —*Software Digest Ratings Report, November 1994*

ANALYST'S CHOICE AWARD "Windows NT [Server], in particular went the additional mile to fit into as many environments as possible. This makes Version 3.5 an excellent choice for an applications server, integrating smoothly into NetWare and LAN Server networks." —*PC Week, November 14, 1994*

EDITOR'S CHOICE AWARD "As for the competition, NT 3.5 is certainly a worthy rival to NetWare and Vines as a network operating system platform and with Unix as a premier application server platform." —*Network Computing, December 1,1994*

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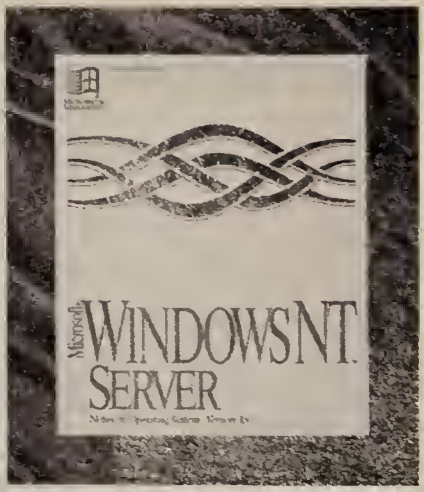
RITY.



IN A DECISION, IT GIVES YOU SOMETHING REAL TO GO ON. AND WITH A CHOICE AS CRITICAL AS UPGRADING YOUR NETWORK, IT BEATS THE DAYLIGHTS OUT OF "ONE POTATO, TWO POTATO......."

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WHERE DO YOU WANT TO GO TODAY?™

Novell releases NetWare 4.1 software developers' kit

BY KEVIN FOGARTY

Boston

Novell, Inc. last week announced the release of a software developers' kit that will make it easier for corporate and third-party developers to build applications that will run on NetWare 4.1 networks.

The kit, priced at $49.99, represents an effort by Novell to spur NetWare 4.1 application development. A lack of such applications has contributed heavily to tepid acceptance of NetWare 4.X to date.

The NetWare 4.1 Software Developer's Kit (SDK) Special Edition consists of application program interfaces (API) and subroutines needed to build NetWare Loadable Modules (NLM) or client-based applications.

It also includes the subroutines that applications need to access NetWare 4.1 directory, messaging and security services. In addition, the kit features a two-user version of NetWare 4.1 and full documentation.

"You have the possibility of doing something much worse [to your network] with NLMs than you ever have with just an errant DLL."

Previously, Novell sold SDKs for $495 on a subscription basis, delivering to developers a basic tool kit plus any new patches, fixes or APIs.

Developers still had to buy copies of NetWare for $495 and up, depending on the number of user licenses, according to Scott Wells, product line manager for NetWare independent software vendor (ISV) marketing.

Paul Mason, an analyst at International Data Corp. in Framingham, Mass., said it is about time Novell shipped a cost-effective NetWare 4.1 SDK. "That should have been out six months before the product shipped. And the way they've priced the stuff before, they've discouraged entrepreneurs at the bottom end of the market [from developing] nifty little products [for NetWare 4.1]," he said.

The kit will be available for a limited time, probably about six months, after which Wells said Novell will return to selling kits on a subscription basis. The Special Edition is designed specifically to encourage users and ISVs that are not building NLMs to do so, according to Wells.

The kit may attract both ISVs and corporate developers looking for a bargain but will probably remain shelfware outside commercial development environments, users said.

"If we were going to market something, it might be worth it, but we have enough trouble developing [Dynamic Link Libraries for Microsoft Corp. Visual Basic applications]," said John Miller, data communications specialist at Healthcare Compare Corp. in Downers Grove, Ill. "You have the possibility of doing something much worse [to your network] with NLMs than you ever have with just an errant DLL."

3Com makes remote site SNA routing a priority

BY JIM DUFFY

Santa Clara, Calif.

3Com Corp. last week announced enhancements to its Boundary Routing software for handling SNA traffic at remote sites.

New filtering, prioritization, compression and local acknowledgment features are designed to improve the performance and reliability of Systems Network Architecture nets equipped with 3Com routers while reducing bandwidth requirements and WAN overhead.

Boundary Routing is a feature of 3Com's NetBuilder remote office routers that off-loads router-table maintenance, packet identification, network management and other tasks to backbone devices. Boundary Routers only decide whether to forward a packet to the corporate network or keep it local, as well as how to prioritize traffic.

Boundary Routing "is a perfect fit for IBM customers with lots of remote sites and little or no [routing] expertise out there," said David Bryant, 3Com's director of IBM internetworking.

Currently, Boundary Routers can transmit SNA and NETBIOS traffic but

See 3Com, *page 55*

Boundary Routing's SNA features

Smart Filters — Reduce SNA and NETBIOS broadcast and session traffic over WAN links.

Payload compression — Reduces packet header to one-fourth of original size, resulting in a fourfold performance increase.

Automatic prioritization — Allows SNA traffic to travel across WAN links before other protocols like IP, IPX and AppleTalk.

Local termination — Locally acknowledges SNA and NETBIOS frames so sessions do not time out.

Cheyenne wares gain ManageWise and OpenView management links

BY KEVIN FOGARTY

Boston

Cheyenne Software, Inc. last week announced the release of a utility that will let users manage Cheyenne software from either Novell, Inc.'s ManageWise or Hewlett-Packard Co.'s HP OpenView for Windows management platforms.

The utility, an enhanced version of the existing Alert.nlm, runs as a NetWare Loadable Module (NLM) on NetWare networks and feeds Simple Network Management Protocol alerts to ManageWise and OpenView consoles across either TCP/IP- or IPX-based networks, according to Cheyenne officials.

The utility and the SNMP Management Information Base that goes along with it make it possible for the net management systems to collect error and alarm data for Cheyenne products, which include ArcServe enterprise backup software, InocuLAN antivirus software, the Monitrix network inventory tool and its FaxServe network fax software.

Alerts trigger icons to change color or trigger an alarm to ring on the central console. Network managers can get detailed information about Cheyenne events by clicking on the icon.

"If you're low on disk space, or a modem failed to reset, or a fax failed to go through, or whatever went wrong, the product talks to the console," said Yuda Doron, chief executive officer of Cheyenne Communications, Inc., the Cheyenne subsidiary that makes FaxServe.

The integration will help Cheyenne extend its market and will make net managers' jobs easier by giving them a central location from which to manage jobs such as faxes and backups, said Paul Mason, analyst at International Data Group in Framingham, Mass.

"In a large enterprise, it really makes sense to have that function centralized because managers can handle all those operations from one site across the board," Mason said.

That benefit will increase as Cheyenne extends SNMP manageability of its products to Microsoft Corp.'s Windows NT operating system and various flavors of Unix, Mason said. Cheyenne did not set a date for porting the application to other platforms.

The current version of Alert.nlm can send alerts to net managers via pager, electronic mail or fax, or it can print alerts on selected printers.

The Cheyenne products that support SNMP will ship within 60 days.

©Cheyenne: (516) 484-5110.

Sybase and Powersoft flesh out future of PowerBuilder software

Tool to gain enterprise edge via DCE and Notes hooks.

BY BARB COLE

Emeryville, Calif.

Sybase, Inc. and Powersoft Corp. marked the closing of their merger last week by outlining plans to grow Powersoft's PowerBuilder software into a tool for building enterprise network applications.

The companies, which initially agreed to the $857 merger in November, will introduce an upscale version of PowerBuilder this spring, said Robert Epstein, Sybase's executive vice president. The new edition will let users generate database triggers and stored procedures, as well as support the Open Software Foundation, Inc.'s Distributed Computing Environment and Lotus Development Corp.'s Lotus Notes.

PowerBuilder, whose critics call it a workgroup-only tool, also will be upgraded to produce application code on client computers that can then run on either clients or servers.

Epstein stressed that PowerBuilder will continue to support databases other than those from Sybase. The tool will gain improved drivers to let PowerBuilder applications work with databases from Oracle Corp., Microsoft Corp., IBM and Informix Software, Inc., as well as support "more high-end features of those databases," he said.

Pricing and availability for the PowerBuilder upgrade were not disclosed.

"We will ensure that PowerBuilder continues to work well with other databases. Our goal is to make it easier to write complex applications in a distributed environment and lower the costs of maintaining them."

Robert Epstein

NO SURPRISE

As expected, PowerBuilder will become Sybase's core application tool, replacing the Build Momentum tool that made it to beta sites but not to market. PowerBuilder will gain an application repository from the Enterprise Momentum project that was to be Sybase's high-end tool, Epstein said.

Mitch Kramer, consulting editor at Patricia Seybold Group, Inc. in Cambridge, Mass., said Sybase is basically "executing what it said it was going to do."

Since the firms announced their intent to merge, the issue of whether PowerBuilder would remain open under Sybase's control has been hotly debated.

Most users, however, said it is unlikely that Sybase would stop supporting competitive databases.

"There's always a general temptation to create an advantage for your own product. But it's not in [Sybase's] economic interest to stop supporting other databases," said Mark Farnham, president of Right Sizing, Inc., a Lebanon, N.H., consultancy specializing in Oracle

Epstein also discussed Sybase's intention to tightly integrate Powersoft's Watcom database server with SQL Server System 10. Watcom, a desktop and laptop PC database, will support System 10's Transact-SQL language as well as its own SQL dialect by year end, he said.

This will let corporate and third-party developers build applications on Watcom that can easily scale up to the larger Sybase database. Conversely, developers will be able to move applications built with System 10 for enterprise nets down to mobile computers without major recoding.

Sybase will also revise its Replication Server technology by year-end so data can be copied among System 10 and Watcom databases. Also, systems administrators will be able to manage Watcom databases using Sybase's Enterprise SQL Server Manager tool.

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Circle Reader Service **#26**

California network keeps commuters moving

BY MICHAEL COONEY

Los Angeles

Sometimes mountains need to be moved to get a network in place.

For the California Department of Transportation (CALTRANS), that was literally the case. The massive Northridge, Calif., earthquake — which damaged or rendered useless many major roads and freeways — in January 1994, provided the impetus to rapidly expand a net of three kiosks that gave Southern California drivers basic travel condition information at the touch of an on-screen button.

In less than seven months, the Smart Traveler net has blossomed into 78 kiosks linked to three hosts providing information about car pools, freeway conditions and public transportation to more than 60,000 users every month.

"Our immediate goal after the earthquake was to help the citizens more easily get around," said Cliff Loveland, project manager for Smart Traveler. "Our long-term goals are to encourage the use of public transportation and ease freeway congestion."

Each IBM Personal System/2-based kiosk includes a color touchscreen and runs IBM's OS/2 and Communications Manager/2 programs. The kiosks are connected via 14.4K bit/sec leased lines to two local concentrators provided by Pacific Bell, which, in turn, support T-1 links to the California Health and Welfare data center in Sacramento, where the three Smart Traveler hosts reside.

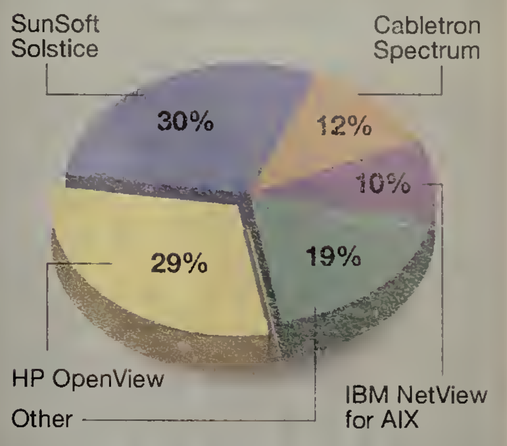
Upon entering the Smart Traveler kiosks, which are located in supermarkets, libraries, malls and other business centers, users select one of three applications. They can view a map of current freeway conditions, find bus or light rail stops and schedules, or pull up a list of local rideshare commuters.

Freeway condition data comes from an IBM mainframe application that is constantly fed information via leased lines from sensors

See California, *page 20*

It's a dogfight

HP is hoping to hold fast to its No. 2 position in the Unix-based network management platform market despite Tornado's delay.



1994 market: $139 million

SOURCE: IDC, FRAMINGHAM, MASS.

VTEL builds application hooks to videoconferencing system

BY ELLEN MESSMER

Austin, Texas

Videoconferencing system vendor VTEL Corp. last week unveiled customizable software for controlling videoconferencing calls, data-sharing sessions and related peripherals, such as electronic whiteboards.

Called AppsView, the Windows-based software lets VTEL users design common, icon-based interfaces that make multiple conferencing systems and programs easier to use.

"If VTEL video equipment is connected to a peripheral, such as a teleradiology machine, AppsView would let the viewer download the medical image from a single interface without having to learn the separate teleradiology application," said Tom Stevenson, VTEL's vice president of marketing.

Elliot Gold, president of Altadena, Calif.-based consultancy TeleSpan Publishing Corp., called the software "a great idea...needed by the distance-learning and medical communities."

VTEL has been far ahead of the rest of the videoconferencing industry in recognizing that video equipment should incorporate computer software and the software capabilities, not just transmit interactive sound and pictures, he added.

VTEL's entire product line — from the desktop 115S series to the high-end MediaMax — was built from the ground up on a computer architecture. Many other vendors have tried to blend video and computing by offering add-on video boards, coder/decoders and cameras for PCs.

To drum up AppsView support, VTEL has formed a new unit called the Application Integration Group. The group will focus on building partnerships with peripheral manufacturers and software vendors, as well as developing customized applications on behalf of users in education, health care and business.

Todd Clayton, VTEL's vice president of sales, said AppsView uses Microsoft, Inc.'s OLE 2.0 application program interface language to support software from third-party developers. Even some OLE 2.0-compatible applications, however, will need to be tweaked to support group video monitors, he said.

So far, only VTEL investor Intel Corp. has vowed to work with the videoconferencing firm, hoping to make Intel's ProShare data-sharing package work with AppsView.

Initially, AppsView is available for the VTEL 115S desktop and 127S group conferencing line. It will not be available until August for MediaMax. The 115S and the 127S are Windows-based, but MediaMax uses a multitasking operating system called DesqView.

VTEL is offering AppsView as a free upgrade to the company's current customers.

©VTEL: (512) 314-2700.

Reality ✔ Check

Product: AppsView
Company: VTEL

The benefits:

- Integrates any OLE-compatible application, such as whiteboards and telemedicine programs, with VTEL's videoconferencing systems.
- Common user interface for all applications reduces training.

The drawbacks:

- Not available for the high-end MediaMax.
- Only Intel has announced a compatible application — its ProShare data-sharing product.

The user view:

"It makes sense and would be of some use to us. But it has to be simple for the operator to use, and I have concerns about VTEL's interoperability with other equipment in the network."

Richard Garcia,
Associate director of the Area Healthcare Education Center,
University of Texas at San Antonio

BRIEFS

Newbridge Networks Corp. and **Madge Networks, Inc.** last week announced they will jointly develop integrated token-ring/ATM products supporting LAN-based voice, video and data traffic. The products will be based on Madge's new token-ring interface chip, RingRunner, and Newbridge's own LAN and WAN Asynchronous Transfer Mode technology.

Products will be available by the end of this year through Newbridge sales channels.

Newbridge: (703) 834-3600.

Users interested in **Asynchronous Transfer Mode** and **remote LAN access** technologies have two **seminars** to choose from over the next two months. The **ATM Year 3** conference headed by ATM pioneer John McQuillan is being held in San Jose, Calif., from Feb. 27 through March 3. A mix of users, vendors and researchers will discuss ATM's state of affairs and its near future, ranging into topics that include wireless ATM and the coming debate between TCP/IP and ATM.

Call (800) 200-4884 for price and scheduling information.

Simware, Inc. this month is beginning a free **seminar tour** discussing remote LAN access in 38 cities across the U.S. and Canada. The tour starts this week and runs through the end of March.

Simware: (800) 267-9991.

Newton's Telecom Dictionary, for nine years now the defining bastion of info-speak, is now available in its 8th edition for $24.95. The dictionary illuminates arcane **technology terms, words** and **phrases** with a relaxed mix of clear historical perspective and somewhat irreverent mirth.

Author Harry Newton notes that earlier editions lasted two years before he felt compelled to publish an update. But the new addition, coming only seven months after the last edition was printed, includes about 120 new pages. Newton has worn out 11 laptop keyboards keeping things up-to-date since day one, when he started the dictionary as a weekend project.

For more information, call (800) 542-7279.

OpenView users batten down for Tornado watch

BY JIM DUFFY

Palo Alto, Calif.

FOLLOW UP

Users of Hewlett-Packard Co.'s HP OpenView management platform say the delay with the distributed SNMP framework is more of a frustration than a setback.

HP disclosed last month that the release of Tornado, the distributed version of OpenView, would be delayed by up to a year because development proved more complicated. Tornado was scheduled to ship midyear (*NW*, Jan. 23, page 1).

As a result, OpenView users continue to wait for a Simple Network Management Protocol-based distributed management platform, while IBM and SunSoft, Inc. customers begin to kick the tires of the distributed offerings from those vendors. IBM this month is expected to ship beta versions of NetView for AIX 3.2, a client/server implementation of the platform in which database and application processing are separated from the management console (*NW*, Jan. 30, page 1).

And SunSoft is shipping its Solstice product line, which includes distributed versions of SunNet Manager and the object-oriented Solstice Enterprise Manager (*NW*, Feb. 6, page 1).

Still, HP users are willing to wait, albeit grudgingly.

"It's just kind of an annoyance; it's just one other thing that's not being supplied on time," said David Heck, network supervisor for the city of Tempe, Ariz.

Heck said he is not considering alternatives to OpenView for distributed management because he has too much invested in it. "I think we'll just ride it out," he said about the delay.

Steve Waldbusser, manager of network development at Carnegie Mellon University in Pittsburgh, is likewise not looking at Open-

See OpenView, *page 20*

INTERNETWORKING MONITOR

by Scott Bradner

Mr. Postman — Read that letter!

Do you ever suspect that the number of clues in the world is a constant, and that with the increase in the world's population, the average density of clues per person is going down? Or that clues are geographically sensitive and just don't inhabit some parts of the landscape, such as certain cities on the Potomac River?

A couple of weeks ago, Sen. James Exon (D-Neb.) introduced S314, the "Communications Decency Act of 1995." On the surface, this bill simply extended the existing federal antiobscenity and antiharassment telephone regulations to the general data communications industry. It proposes to substitute "telecommunications device" for the word "telephone" in a number of existing laws.

But there are some troubling aspects to this proposal. The current text makes it a crime if someone "makes, transmits or otherwise makes available any comment, request, suggestion, proposal, image or other communication" that is judged to be obscene. Run afoul of this, and it could cost you 100 grand and two years in jail.

This would imply that service providers would have to somehow monitor all of the communications going over their network from all parts of the world and judge on the fly what was bad. (As an aside, who's definition of "bad" should you use, that of Milpitas, Calif., or some small town in Tennessee?)

That would take some tricky technology, especially to judge images as they zip past at the speed of light. How is a computer program going to be able to tell if a picture of some kids at the beach will be seen as titillating to some? Seems to me like a job for the National Security Agency computers; although while I expect they can keep up with the messages, I wonder about the pictures.

It would appear that all providers might have to scan things themselves since they could not guarantee that some upstream provider wouldn't mess up and let a dirty word through. That means Fred's Internet service, operating out of his parent's basement at 37 Main Street, will be making some heavy investments in computers. This bill just might be good for the supercomputer biz.

One might think that Exon was in some kind of time warp, stuck back in the days of the pony express, where the postal service might have time to screen each letter in an effort to prevent Aunt Mabel from reading anything too shocking.

But apparently not. When the technological difficulty of the task was pointed out to him, Exon was quoted in *The Wall Street Journal* as saying, "If I were against this, if I did not want to be bothered with it, that's the argument I would make." Sometimes the simple truth is not enough.

The question of practicality here is in addition to the question of whether this sort of thing should be the responsibility of companies that transport information or of the originators of that information. Although it might be hard to control all of the originators, especially those outside the U.S., there seems to be a bit of shoot-the-messenger thinking going on here.

Another question is even more basic. Once started on this type of endeavor, where can one expect to end up? Pornography today, religion tomorrow and criticizing the government the day after? FedEx and the postal service also deliver messages. Will they be next? This whole thing could put teeth in your mother's exhortation to say nothing if you can't say something nice.

It might to be time to warm up your writing-to-Congress pen. Or maybe use a crayon — it might be more familiar to them.

Disclaimer: Harvard has educated a passel of congress critters over the years, so it undoubtedly has a higher opinion of them than I express here.

➔ Bradner is a consultant with Harvard University's Office of Information Technology. He can be reached via the Internet at sob@harvard.edu. He shares this space with Dan Minoli, whose column will appear next week.

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BUILDING A BILLION-USER NETWORK

With recent advances in networking and information technology, the industry is poised to take its next great step.

Not since the invention of the Gutenberg press has the communications industry witnessed a more exciting time. With recent advances in networking and information technology, the industry is poised to take its next great step toward pervasive computing. Work is no longer a place or location, it's an activity. Pervasive computing will connect people to other people wherever they are and make the information they need available whenever they need it. Pervasive computing will redefine personal and organizational productivity, letting you work on airplanes, in hotel rooms, at home or in remote locations without losing the access to information and services you're used to in your office.

To help accelerate the evolution toward pervasive computing, Novell® has an ambitious goal—to enable one billion users to be connected together by the end of this decade.

The Network Is the Key

The key to making pervasive computing real is the network. Increasingly, the network is the crossroads upon which people access information and communicate. It has moved far beyond a way to connect computers and share peripherals, such as modems and printers. The network now connects and manages the countless computing devices, applications and services that users need to make pervasive computing a reality. And, the network shields people from the underlying complexity of computer technology, making the use of pervasive computing as easy as using a telephone.

How Will Pervasive Computing Affect Me?

Pervasive computing will work where and when you work. You'll have seamless access to information and services regardless of where you or the services and information are located.

Pervasive computing will enable you to:

- Connect your home offices to your "work" offices. The promise of working from home is now becoming a reality due to easier access to the network from the home.
- Access people and information with cellular technology. Many people work away from the office and home. Pervasive computing and cellular technology will let you work wherever cellular access is available.
- Access the Internet and other online services. Wherever you are, you need access to the wealth of information these services provide. ►

- Utilize advanced network services. The network provides the services that allow you to work in ways that—until recently—were not available. For example, telephony services, which integrate the telephone and the computer to increase productivity, and document management services, that keep track of a company's intellectual assets found in documents, are both available today in NetWare®. And multimedia services which capture live video action via the network are also available. With pervasive computing, these services and others will be available—no matter where you are or what platform you are using.

Pervasive computing will connect people to other people wherever they are

Novell's Role In Pervasive Computing

Constructing a one-billion-user network and helping the industry to deliver on the promise of pervasive computing requires a company with a unique blend of history, focus, products, partnerships and support infrastructure. And Novell, with its strong industry partnerships, is the only company with the resume to get the job done.

Novell's qualifications:

- Pioneered the networking industry and has continued to focus its efforts on accelerating the growth of network computing.
- NetWare 4.1, Novell's leading network operating system, is built on a solid platform that has been progressing for over 11 years. Over 80 percent of the code in NetWare 4.1 is from NetWare 3.12, giving the product unmatched stability and performance. NetWare 4.1 also has the necessary features to provide a platform that can support one billion users. These features include its seven core network services, NetWare Directory Services, integrated messaging, network management, security, multiprotocol routing, along with enhanced file and print.
- Through its merger with WordPerfect®, Novell has the network applications that leverage the capabilities of the network and present them to the user.
- Has the industry's most comprehensive worldwide service, support, education and distribution infrastructure.
- Has an unprecedented reputation of working with partners to respond to your needs and deliver the solutions you need. The job of delivering pervasive computing is too big for one company. It will take the efforts of many industry partners working toward a common goal to make pervasive computing a reality. Novell will lead the way.

It is clear that pervasive computing is the next exciting step in the computing industry and will have a tremendous impact on people around the world. With Novell's bold goal of making a one-billion-user network a reality, pervasive computing is not far away. It should only be a matter of time before you will be reading an article like this on your palm-top computer while on a picnic with your family. ■

Continued from page 14

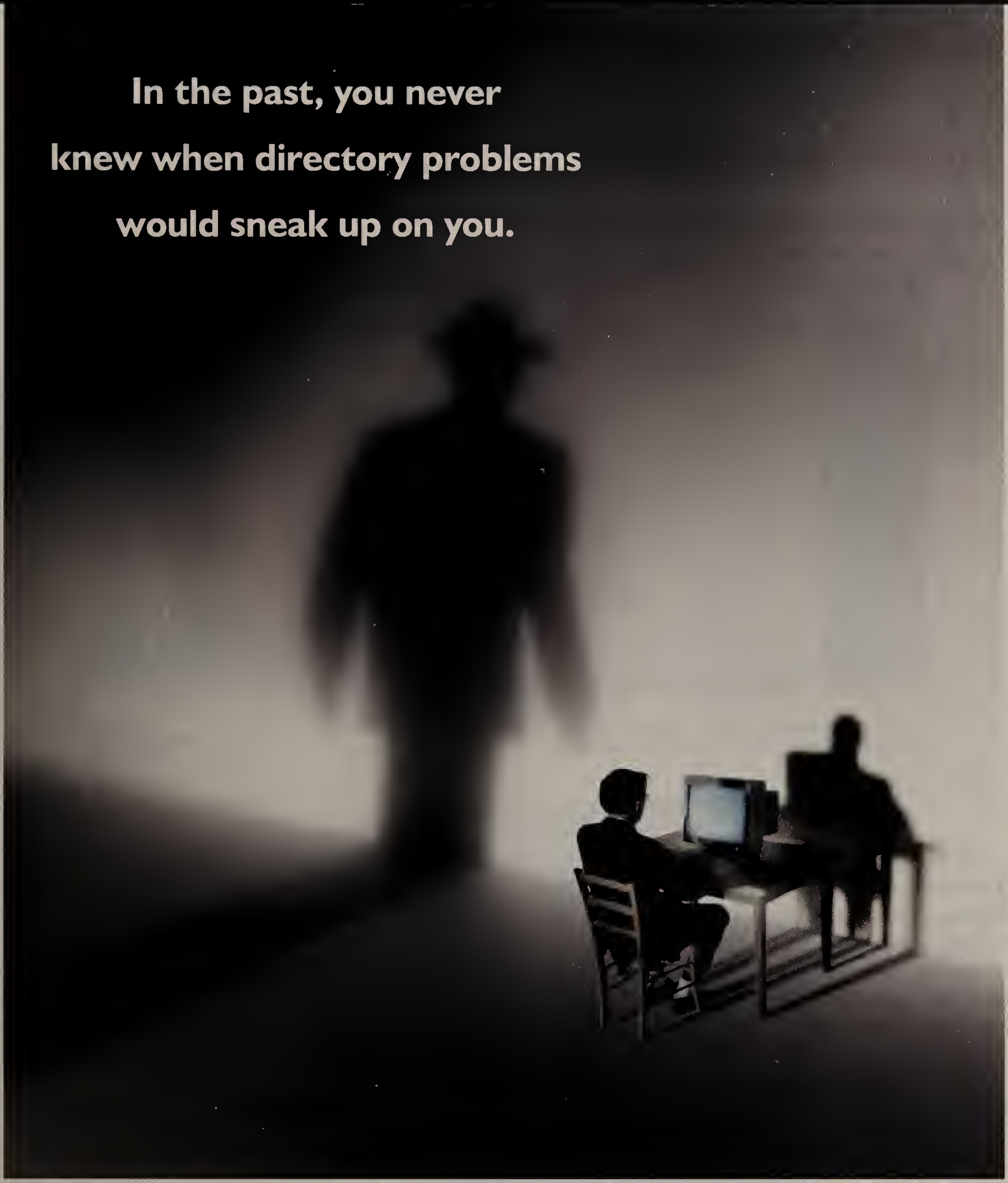
complete backups of your entire system.

In-Place Upgrade—Similar to the across-the-wire (same server) migration method, the in-place upgrade allows you to upgrade an existing NetWare 2 or NetWare 3 server to NetWare 4 without requiring a new server. However, unlike the across-the-wire (same server) method, it upgrades both data and bindery files at once.

The Next Steps

After you've chosen your upgrade method, Novell offers a step-by-step guide to help you through the migration process. After the upgrade to NetWare 4 is complete, it is important to complete the tasks that must be done after the upgrade. These are clearly spelled out in Novell's Upgrade Guide. The last step involves upgrading the client software on your network. With Novell's new client technology, this can be done at your convenience either before or after your server migration.

Once you've upgraded to NetWare 4.1 you can begin enjoying the benefits of your new operating system including easier administration, lower computing costs and a host of new features and functions that will make your life as network administrators and network users more productive and enjoyable. ■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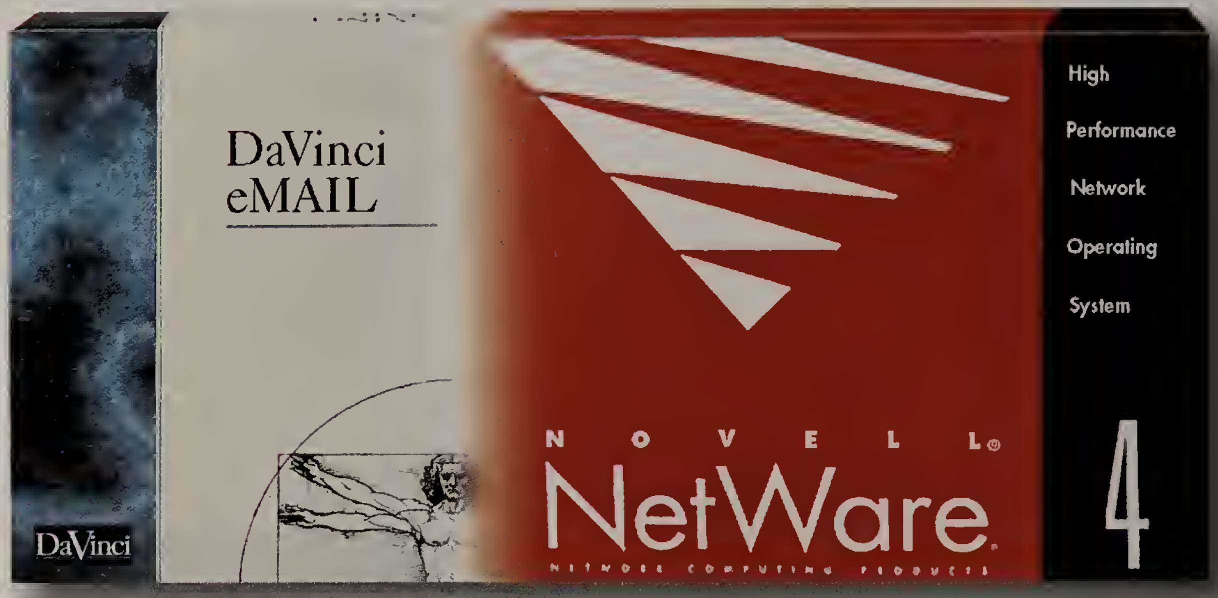

"DaVinci eMAIL tops the charts hands down… DaVinci leads with the best set of features… Once again, DaVinci has surpassed the competition…" — INFO WORLD

DaVinci eMAIL is still the leading NetWare MHS-based electronic mail package in the world with over 2 million users. DaVinci eMAIL is optimized to run on Novell NetWare, and continues to offer the tightest integration available with Novell messaging technology, including native SMF-71 and NDS support.

DaVinci eMAIL is designed to leverage the NetWare investment you have already made on your network, without having to duplicate efforts or services. DaVinci eMAIL takes advantage of the security, directory capability, and administration tools already in place on your network.

Our newest version provides many easy-to-use yet powerful features:

▸ collapsible folders ▸ configurable toolbar ▸ automatic message forwarding and answering ▸ simple MAPI support ▸ new Rules option to help you manage your messages.

For NetWare 4.1 users, the newest release of DaVinci eMAIL tightly integrates with NDS (NetWare Directory Services), using NDS as the central repository for eMAIL message addressing/routing. Other DaVinci eMAIL features for NetWare include:

- **Automatically reads the NetWare bindery, (NDS in NetWare 4.1) to create mailboxes**
- **Changes, additions and deletions to NetWare are reflected in DaVinci eMAIL's address book**
- **Synchronizes addresses across multi-server environments**
- **Uses NetWare's rights and login identities for DaVinci eMAIL users**
- **Uses the NetWare Broadcast feature to alert users of incoming messages**

Whether you have a small LAN or a large NetWare network with several thousand users across multiple platforms, DaVinci eMAIL is a proven solution with over 2 million users worldwide. Supporting DOS, Windows, OS/2, and Macintosh platforms, DaVinci eMAIL has simple administration, easy-to-use features, NetWare integration and rich connectivity through the industry standard transport, NetWare MHS.

To see why DaVinci eMAIL is still the best E-Mail for NetWare, call 1-800-767-6683 today to receive a FREE 30-day test drive of DaVinci eMAIL.

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WHAT YOU SHOULD EXPECT FROM A NOS

How to get your money's worth.

So you've decided to purchase a network operating system. Or maybe you already have one and are looking to upgrade your current system to take advantage of the new features and functions offered by the latest versions. That's great! Many organizations around the world are discovering that network operating systems, or NOSs, can solve many of the problems caused by older legacy systems, including high maintenance and administration costs, limited flexibility, and expensive hardware costs.

When shopping for a NOS or looking for one to upgrade to, what should you look for? How can you get through the marketing hype to the real facts? This article helps provide you with the necessary information and gives you a set of guidelines to make an informed, educated decision about the right NOS for your organization.

General Guidelines

As a general rule, there are four important considerations or attributes that a NOS should provide.

1. A network should lower the cost of computing by increasing the productivity of network administrators and users.
2. A network should be easy to use and administer.
3. A network should be easy to migrate to.
4. A network operating system should offer investment protection by providing a platform for future growth.

The best way to determine if these guidelines apply to the NOS you are evaluating is to obtain a copy of the product and test it yourself. You can also talk to customers who are using the product to learn about their experiences. Many companies have lists of customer references or success stories that will give you the information you need.

The Seven Fundamental Network Services

In addition to the general guidelines outlined above, a NOS should provide seven fundamental network services. These services are directory services, integrated messaging, network management, security, multiprotocol routing, along with enhanced file and print. Without this basic set of services, a network operating system is incomplete and won't provide the functions needed to run your business today, and tomorrow, without expensive additions.

- Directory services are a very important feature. A directory is a distributed information database that provides

access to all network users, information and resources—regardless of where they are located on the network. Directories allow administrators to easily set up, administer and manage networks of all sizes. A directory should have the tools necessary to easily manipulate the directory tree to accommodate for organizational changes. Integration with network services such as messaging and support of third-party applications that leverage the directory's capabilities are also important features.

- Messaging is a network service that provides the basis for automatic data transfer across the network. Messaging services should be open and support all of the popular mail client applications: GroupWise, NetWare MHS client applications, and mail-enabled applications based on CMC and Simple MAPI, such as Microsoft Mail.

- Management and administration of a network is critical. A full-featured NOS should provide a single-point-of-network administration. This will greatly simplify the administration process. In addition, easy-to-use, graphical tools should be available that allow the network administrator to easily control the most commonly used NOS functions and administration tasks.

- Information moving across networks must be secure. Today's network operating system should provide a high level of security while maintaining the network's performance and ease of use. Important features to look for are RSA public key encryption, an independent auditing capability, packet signature and C2/E2 certification. Novell is the only company to provide certified security for the network, not simply the desktop.

- WAN support and routing are critical components for supporting enterprise-wide, global networks. It is important to look for an operating system that provides both TCP/IP and IPX transport protocols. The NOS should also allow you to configure these transports to fit your computing environment.

- File services should provide native file support for all your client file systems, including DOS, MS Windows, Macintosh, UNIX, OS/2 and OSI. In addition, you should look for more advanced file features such as: file compression to reduce the amount of storage needed; data migration to expand on-line storage by integrating cost-effective storage media into the network file system; and block suballocation to maximize disk usage. These features will save you disk space and money by delaying the purchase of expensive storage media.

- Vendors' print services should make network printing easy. The key here is whether the vendor has a directory service that allows users to print documents to a printer—anywhere on the network. Users should no longer need to be on the same server as the printer; know where the printer is connected to the network; or how access is established. Since printing is still one of the most widely used network services, this feature increases productivity by saving users a tremendous amount of time.

A network operating system should provide seven fundamental network services

Other Important Considerations

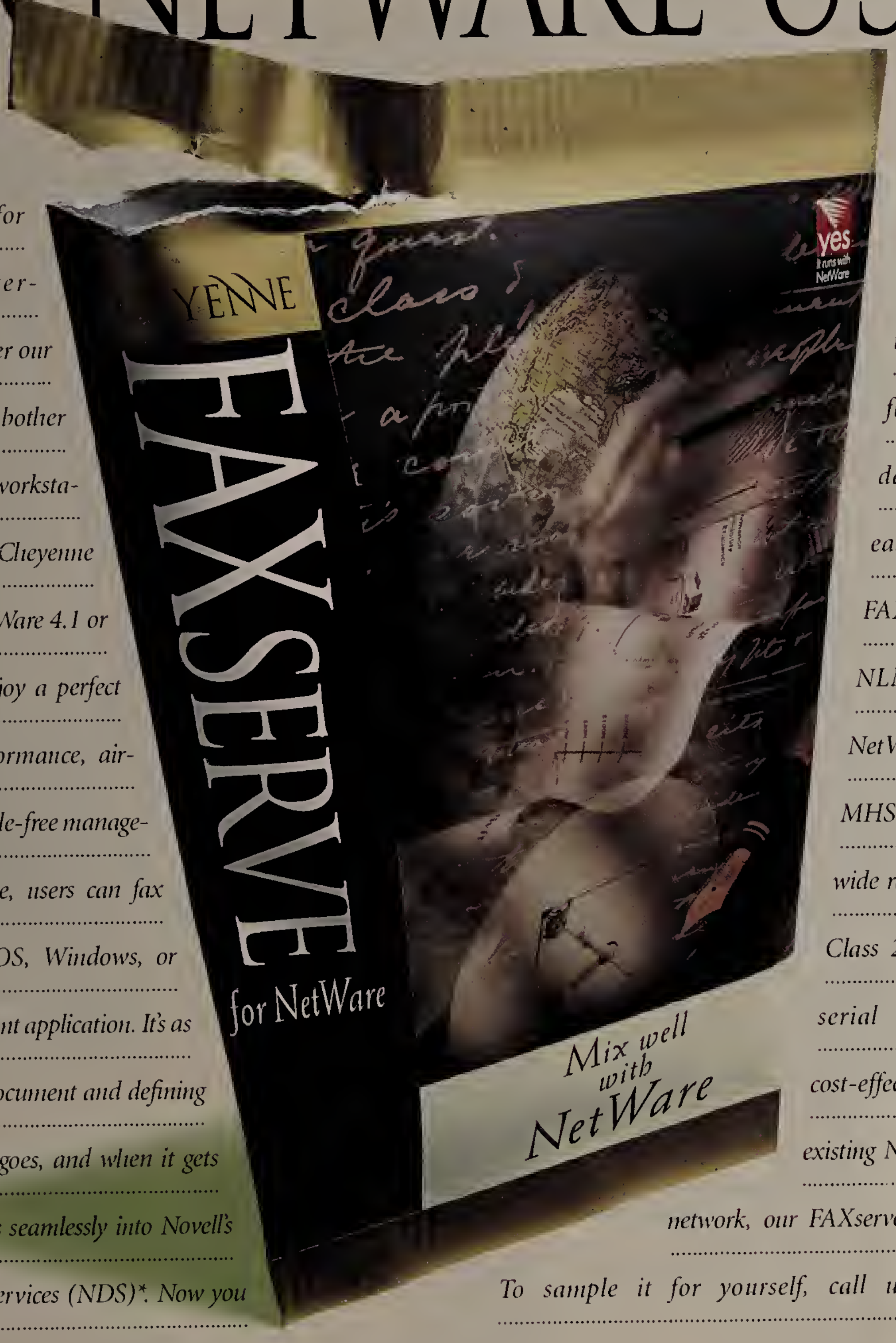
In addition to these services, there are other considerations when choosing a network operating system. These considerations are overall reliability, product maturity, installed base, number of advanced network services and support infrastructure.

Without reliability, a network is of no use. Important features for a reliable NOS include a distributed architecture that builds in redundancy to protect user data on the network. In addition, hardware fault tolerance is important to a network's reliability, because the most common point of failure on a network is the hardware.

Product maturity and the current installed base helps to determine whether a product is well tested, reliable and stable. Generally, the longer a product has been available and the larger the installed base, the better the product's reliability and stability.

In addition to the seven fundamental services mentioned earlier, advanced network services provide an additional level of productivity for users and administrators, and allow you to fully leverage the power of the network. Some of the advanced services to look for include: telephony, multimedia, document management, imaging, communications, storage management, database and hierarchical storage management.

As a final consideration, look at the vendor's support infrastructure. Companies should have the necessary resources for you to obtain the product from a knowledgeable source, train you to use the product, service and support the product when you have questions or problems, and have the necessary partnerships to solve problems that arise in a multi-vendor computing environment. ■



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CHEYENNE
COMMUNICATIONS

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Using the guidelines found in this article, the following chart compares two vendors' network operating systems —NetWare 4 from Novell and Windows NT Server from Microsoft. This template can also be used to compare other network operating systems, helping you to make an informed and educated decision on which organization's network operating system is best for your needs.

Product Comparison Template

	NetWare 4	NT Server
File Services	• Native support for DOS, MS Windows, Macintosh, UNIX, OS/2 and OSI systems • File compression • Data migration • Block suballocation	• DOS, MS Windows • OS/2 text only • No Macintosh support • No advanced file services
Print Services	• Eliminates location dependency • Printers are objects in the directory	• Basic print capabilities only • Users must know server location of printers
Directory Services	• NetWare Directory Services	• No directory capability • Domain service only
Security Services	• RSA public key encryption • Independent audit • Packet signature • C2/E2 certification of network • Trustee modifications • Equivalence alterations	• Not offered • Not offered • Not offered • C2/E2 certification of single Windows NT node • Not offered • Not offered
Integrated Messaging Services	• NetWare MHS integrated for entire network	• Microsoft Mail 3.2 single server support
WAN Support and Routing Services	• NetWare IP • NetWare Multiprotocol Router • NetWare Link Services Protocol	• Basic internal routing with NetBEUI
Network Management Services	• Open platform based on SNMP • Full directory and resource management	• SMS manages desktop only
Advanced Network Services		
-Telephony	• Server-based • TSAPI services	• Client-based • TAPI services
-Document Management	• SoftSolutions products	• None
-Imaging	• Imaging services add-on	• None
-Communications	• NetWare for SAA • NetWare for LAT • NetWare Connect	• SNA Server • Remote Access Service
-Storage Management	• NetWare Storage Management Services	• None
-Multimedia	• Server-based NetWare Video	• Client-based Video for Windows
-Data Migration	• HCSS	• None
Reliability	• NDS distributed architecture • NetWare SFT III full server mirroring	• RAID 5
Architecture Maturity	• 11 years	• 1 year
Support Infrastructure		
-Technical Support Alliance	• Founder	• Member
-Authorized Education Centers	• 1,200	• 500
-Certified Engineers	• 55,000 CNEs	• 1,000 CSEs
-Authorized Resellers worldwide	• 28,000	• 5,000
-Authorized Service Centers	• 1,200	• No similar program offered
Installed Base	• 40 million users	• Less than 1 million users

The guidelines provided in this article along with the comparison chart will make your choice of network operating system clear. ■

The BEST of TIMES 1994 LAN TIMES

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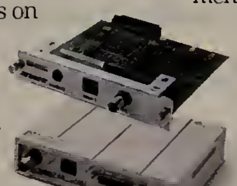

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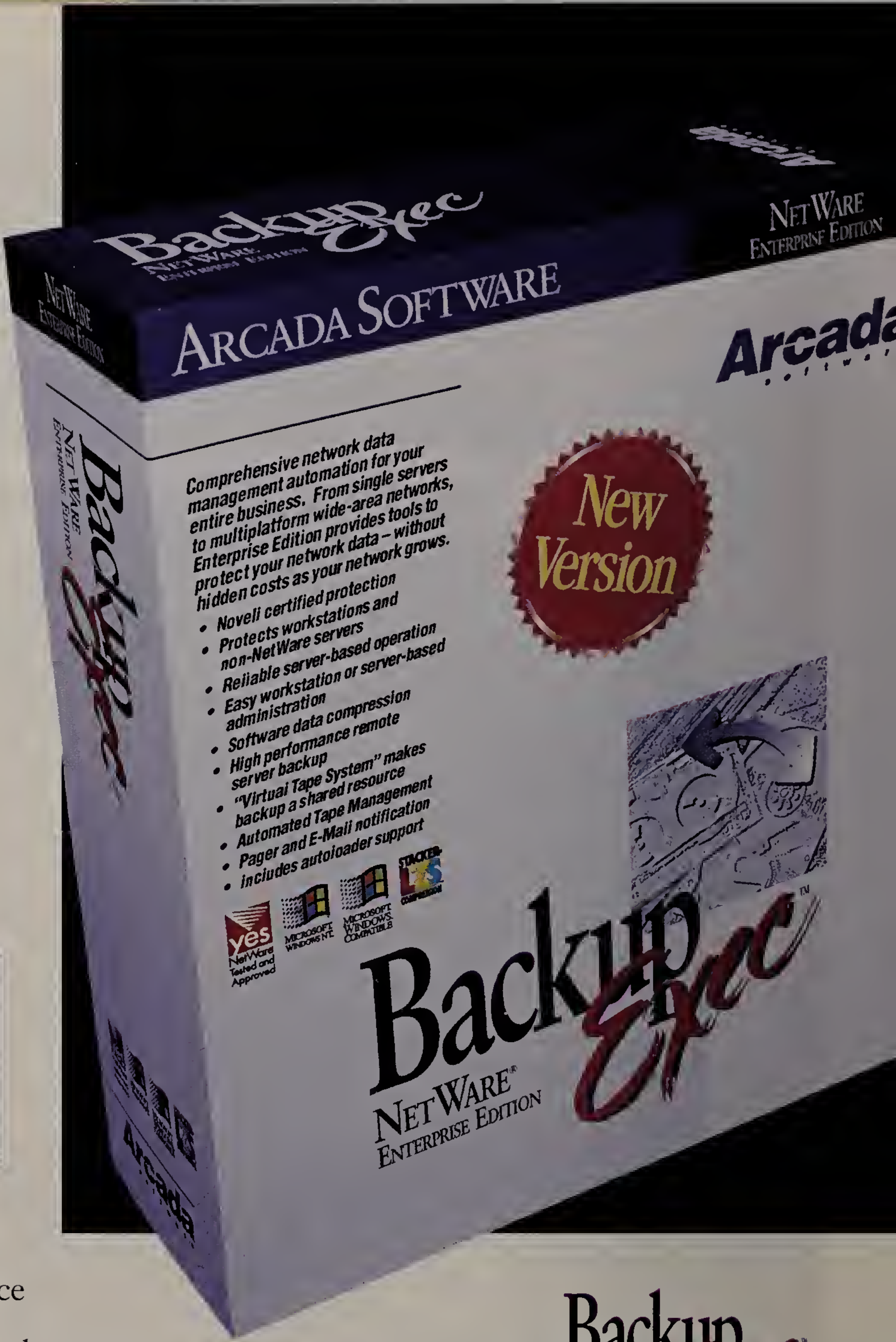
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MAKING THE MOVE TO NETWARE 4.1

It's easier than you think and the benefits will have you asking—"Why didn't I do this sooner?"

Moving to NetWare 4.1 will make your network easier to use and administer, and will lower your computing costs. These are pretty bold statements, but many customers are finding these claims to be true.

NetWare 4.1 is the latest version of Novell's leading network operating system (NOS). The product delivers the seven core services necessary to run a business today and tomorrow, including NetWare Directory Services, integrated messaging, network management, security, multiprotocol routing, along with enhanced file and print. The product also reduces the cost of ownership by providing tools that dramatically increase the productivity of administrators and users. With NetWare 4.1, you have access to advanced services such as telephony, multimedia, document management, communications, database and storage management that are not available in any other NOS. And, NetWare 4.1 is supported by a strong infrastructure that includes over 28,000 Novell Authorized Resellers℠, 55,000 Novell Certified Engineers℠, 1,200 Novell Authorized Education Centers℠ and 1,200 Novell Authorized Service Centers℠.

If price has been a barrier to upgrading, the price of NetWare 4.1 is now the same as the price of NetWare 3.12, making it a great time to upgrade.

So, now that you've decided to upgrade to NetWare 4 from earlier NetWare versions or from another vendor's NOS, how do you go about it? It's actually very easy, and Novell offers the tools and methods that make upgrading painless and worry-free.

Choosing an Upgrade Method

NetWare 4 includes a number of different upgrade utilities. The one you choose depends on your particular environment, as well as your currently installed server hardware. The following options are available for upgrading previous versions of NetWare: across-the-wire (new server), across-the-wire (same server) and in-place upgrade.

Across-the-Wire (new server)—The across-the-wire (new server) upgrade method migrates data and bindery information from your NetWare 2 or NetWare 3 server, across the network, to a new (or existing) NetWare 4 server on the same network. The bindery is the store of information for users, groups and workgroups on a single NetWare 2 or NetWare 3 server.

►

This migration method works by simply copying selected data files from the source server to the destination NetWare 4 server. The bindery information is first migrated to a working directory on the local hard drive of the workstation from where you are running the MIGRATE utility; then it is translated to the NetWare 4 Directory Services format and migrated to the NetWare 4 destination server.

Across-the-Wire (same server)—The across-the-wire (same server) migration method allows you to upgrade an existing NetWare 2 or NetWare 3 server to NetWare 4 without requiring a new server. This method only migrates the bindery information; it does not migrate data files. With this method, data files are migrated by performing a backup with a third-party backup utility before you begin the migration process and then restoring the data files after NetWare 4 has been installed on the server.

This system is preferable for some customers because it has the advantage of not requiring additional server hardware. However, because this method impacts existing data on your hard disk, it is important to have two

Continued on page 4

Impact of Moving to a Directory

NetWare Directory Services makes the network easier to use and reduces administrative costs.

Once you've upgraded to NetWare 4.1, one of the main differences you'll notice, whether you have a single server or large network, is how easy it is to administer the network using NetWare Directory Services. You will be pleasantly surprised by the directory's flexibility, ease of use and reduced computing costs. With NetWare 4.1, Novell is also providing a number of utilities that will greatly simplify network administration.

What Is a Directory?

A directory is essentially a resource database that locates and accesses information across the network. The key elements to a network directory are a distributed database containing all relevant users, information and resources an organization requires. Novell is unique in this approach, since most computing systems do not offer a directory.

NetWare Directory Services

NetWare Directory Services (NDS) replaces the bindery, which served as the system database for previous versions of NetWare. While the bindery supports the operation of a single NetWare server, NetWare Directory Services supports an entire network of servers. Instead of storing all information on one server—which can be a single point of failure—information is distributed over a global database and accessed by all servers on the network, eliminating the single point of failure and providing increased reliability.

NDS helps manage directory resources such as NetWare users, servers, volumes, printers, etc. Graphical or text utilities provide administrative functions for NDS and the file system that greatly reduce the time you spend administering the network, thereby reducing your administration costs. Network users will also notice a difference. With NDS, you only have to login to the network once to access all of their authorized information and network resources.

Simplified Maintenance with New Administration Utilities

With NetWare 4.1, Novell is providing a number of new utilities that make using NDS much easier. These new tools allow administrators to create, move or modify objects, move subtrees, rename containers, merge directory trees and rename a directory tree. Novell is also providing NetSync, a NetWare bindery synchronizer that provides centralized administration of a mixed NetWare 4 and NetWare 3 network, allowing easy and gradual migration from NetWare 3 to NetWare 4. DSMERGE is a new utility that lets you merge separate directory trees into a single tree. You can also use DSMERGE to rename a tree or to verify that all servers in the tree are responding properly, and to view time synchronization information. ■

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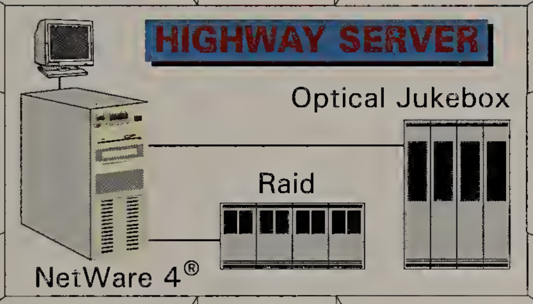

Media

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Magneto-Optic
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Raid
WORM

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Mac® OS/2®
Windows 95®

Platforms

Database
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Multimedia
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Data Types

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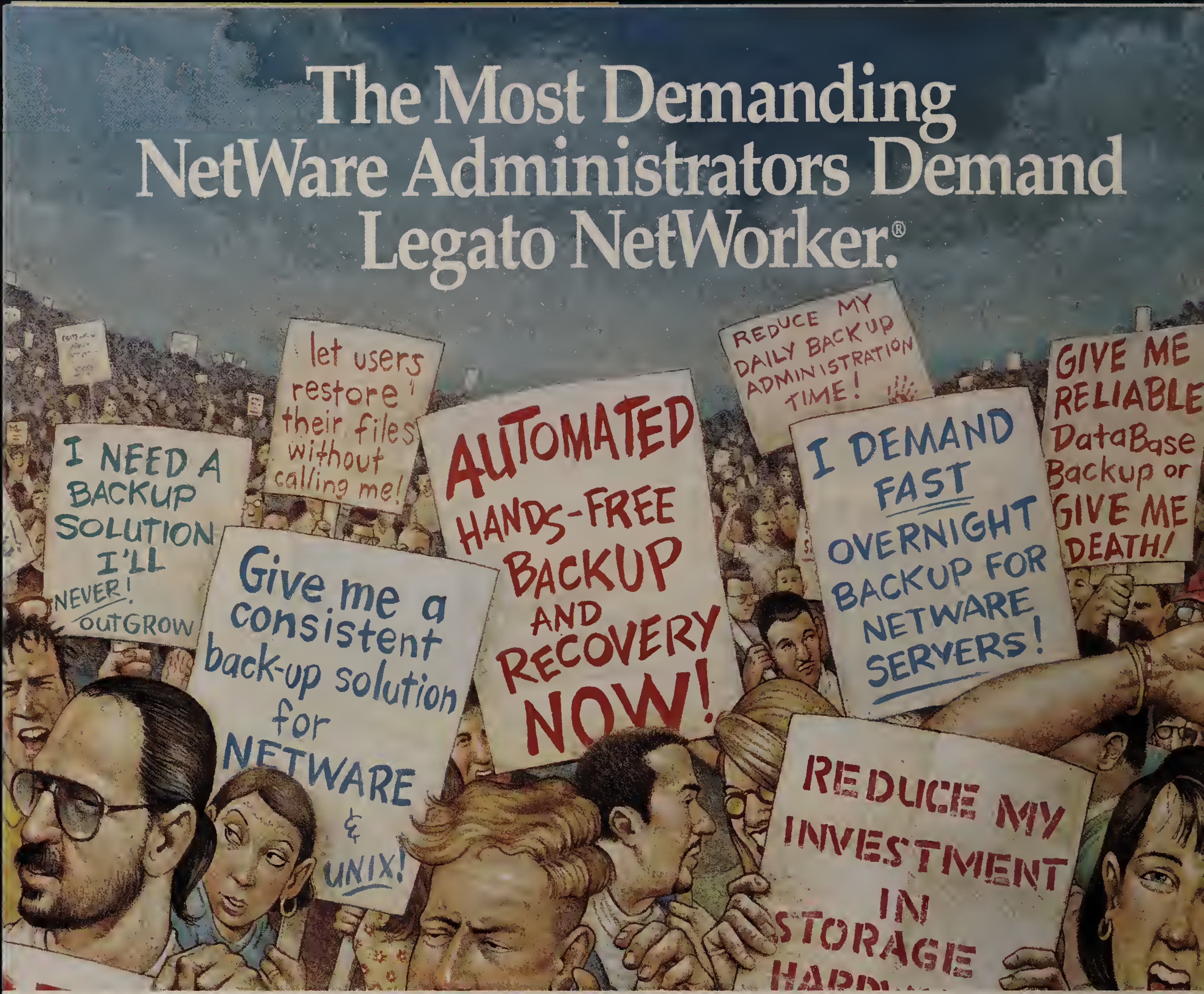
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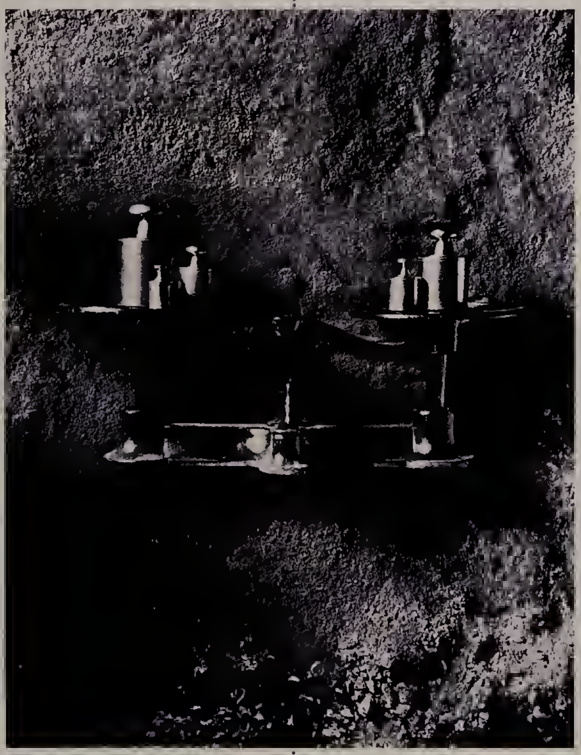
THE RESULTS ARE IN

Benchmarks, comparisons and awards show NetWare 4.1 beats the competition in delivering performance and key features.

Early benchmarks, comparisons and awards indicate that Novell has a winner on its hands with the latest release of NetWare 4. These studies, that compare NetWare 4.1 to Microsoft Windows NT Server, IBM LAN Server and Banyan Vines/ENS, clearly show that NetWare 4.1 extends its position as the performance leader and provides the features necessary for customers of all sizes to run their businesses.



Feature Comparison

One of the first questions customers should ask when evaluating a new operating system is—"Does the product include the features needed to run my business?" A recent report by Novell found that Novell stands alone, or in very limited company, when comparing the features of the most common network operating systems. The report is divided into two sections: core services and enhanced services.

Core Services—When looking at core services, only Banyan VINES comes close to matching NetWare 4.1's built-in directory services and integrated messaging, but its implementations are not as powerful, scalable or available to as many clients. In security and network management, NetWare 4.1 clearly outmatches the others. Unlike LAN Server and Windows NT, Novell's NetWare Administrator includes a single tool for managing all NDS objects including users, groups, servers and resources—greatly simplifying network management and administration. Where multiprotocol routing is concerned, NetWare stands alone as the only NOS that incorporates complete multiprotocol routing in its core offering.

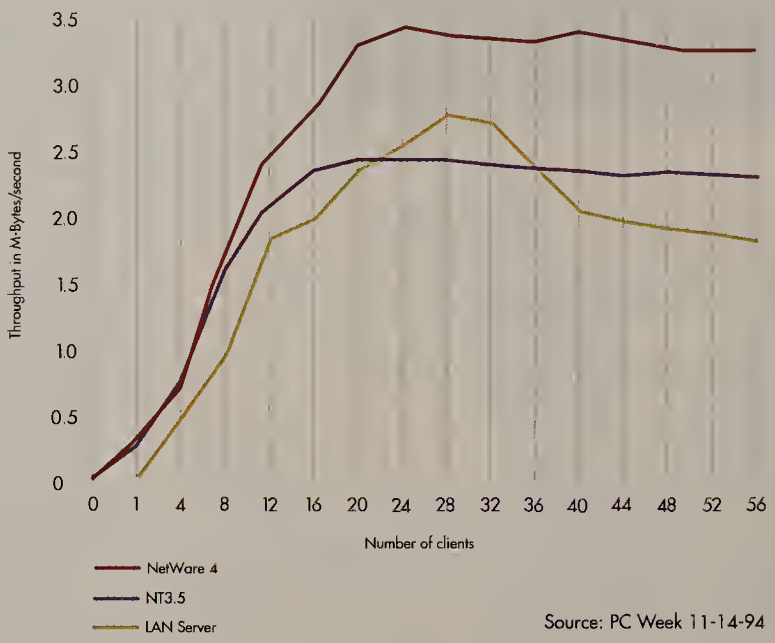
Enhanced Services—In enhanced services, the depth of NetWare 4.1 is clear when compared to the other NOSs. Remote access is the only service in other NOSs that is somewhat on par with NetWare. In all other areas, their functionality is limited at best. In the areas of telephony, imaging, document management and storage management, NetWare 4.1 has literally no competition from other NOSs.

The comparison report states, "The message should be clear: NetWare 4.1 offers stronger core services to its users than the competition, and in the area of enhanced services, offers more and better offerings than any other NOS."

Performance Comparison

The release of new versions of any NOS is reason enough for a performance

During the Disk Mix test, which tests the speed of the server as it handles file operations, NetWare 4.1's performance outstrips that of NT or LAN Server.



Source: PC Week 11-14-94

comparison. Novell recently conducted performance tests in its Provo, Utah, SuperLab to benchmark the operating systems mentioned in this article. Novell's SuperLab is one of the largest and best equipped testing facilities in the world.

To be as fair and objective as possible, Novell used the NetBench 3.0 benchmark test suite developed by the Ziff-Davis Benchmark Operation (ZDBOp) to test each of the network operating systems. NetBench 3.0 is specifically designed to test network server performance and is the same test suite that *PC Magazine*, *PC Week* and other Ziff-Davis magazines have used to independently conclude that NetWare is still a "speed demon" among network operating systems. All NOSs were run on the same server and client configuration, and Novell's testing was conducted with strict care to optimize client and server configurations for all three NOSs.

The Results

Novell's test results showed that NetWare 4.1 remains king of the performance hill.

The results found by Novell are backed up by a recent evaluation in *PC Week's* November 14, 1994 issue. The review titled, "Guide to Operating Systems" looked at the newest versions of the enterprise-capable server operating systems including IBM's LAN Server 4.0, Microsoft's Windows NT 3.5 Server and Novell's NetWare 4.1. The review also concluded that NetWare 4.1 "remains the speed demon" in performance and made the product its Analyst's Choice.

	Novell NetWare	MS Windows NT Server	IBM LAN Server	Banyan VINES/ENS
Core Services				
File	✓	✓	✓	✓
Print	✓	✓	✓	✓
Directory	✓	Limited	Limited	✓
Security	✓	Limited	Limited	Limited
Integrated Messaging	✓			✓
Multiprotocol Routing	✓			
Network Management	✓	Limited	Limited	Limited
Enhanced Services				
Host Connectivity	✓	Limited	Limited	Limited
Remote Access	✓	✓	✓	✓
Telephony	✓	✓*		
Video Server	✓	✓*	✓	
Imaging	✓	✓*		
Document Management	✓			
Storage Management	✓			
Fault Tolerance	✓	Limited	Limited	Limited

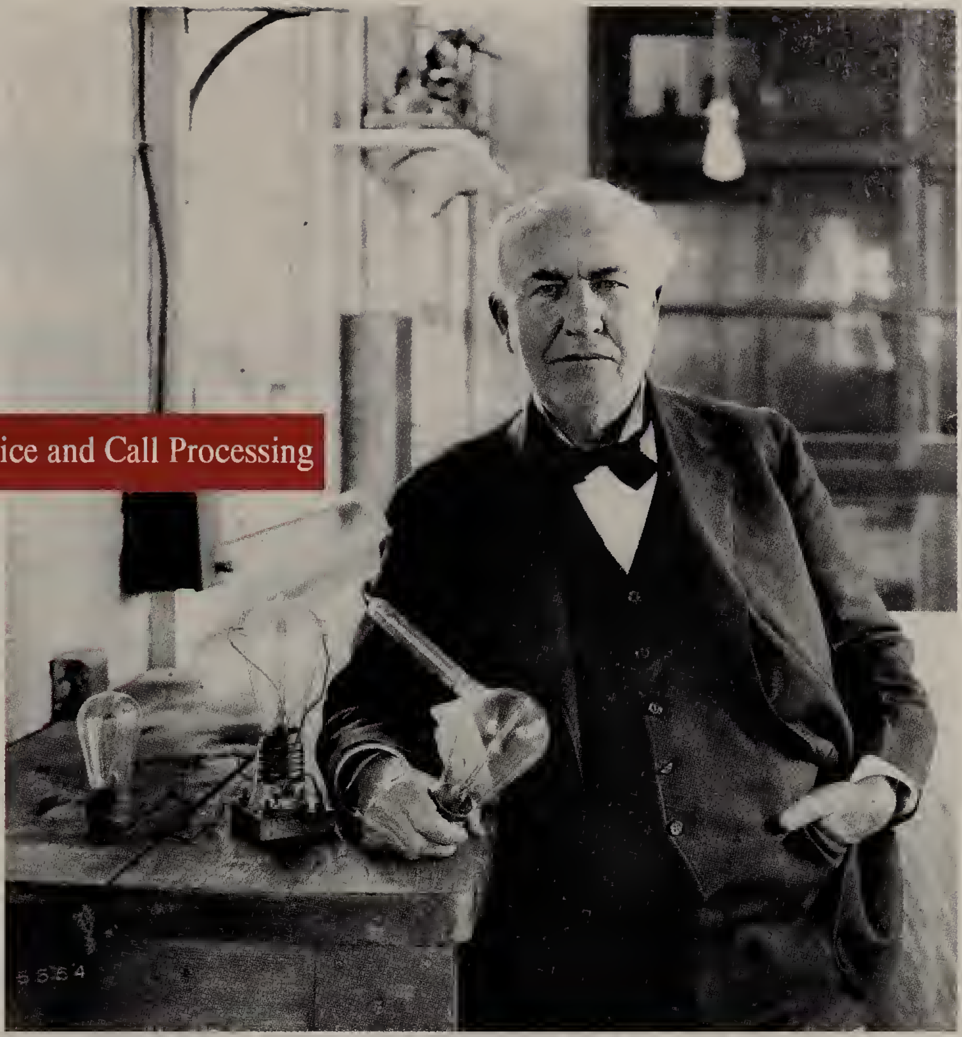
*indicates that these enhanced services are workstation-based, not server-based (as is the case with NetWare 4.1).

Awards

As a network platform, NetWare 4 has won many prestigious reader and editor awards including *Network Computing's* MVP award for Best Network Operating System, *InfoWorld's* Product of the Year, *Byte's* 1993 Award of Merit, *PC Computing's* 1993 MVP winner, *LAN Magazine's* 1994 Product of the Year, *VAR Business'* 1993 Product of the Year and *Data Communication's* Hot Product.

The results of these benchmarks, comparisons and awards show that NetWare 4.1 has the features and performance necessary for customers of all sizes to run their organizations. ■

We Didn't Invent NetWare. We Just Gave It a Voice.



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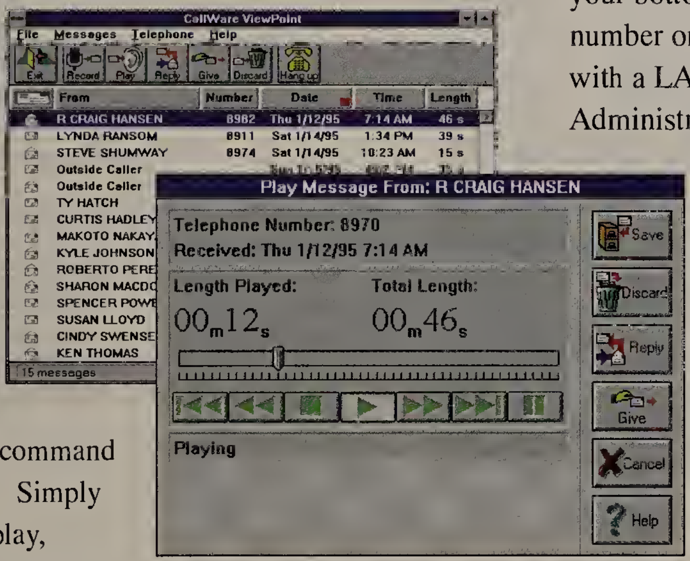

From	Number	Date	Time	Length
R CRAIG HANSEN	8982	Thu 1/12/95	7:14 AM	46 s
LYNDA RANSOM	8911	Sat 1/14/95	1:34 PM	39 s
STEVE SHUMWAY	8974	Sat 1/14/95	10:23 AM	15 s
Outside Caller				
Outside Caller				
TY HATCH				
CURTIS HADLEY				
MAKOTO NAKAY				
KYLE JOHNSON				
ROBERTO PERE				
SHARON MACDO				
SPENCER POWE				
SUSAN LLOYD				
CINDY SWENSE				
KEN THOMAS				

15 messages

Play Message From: R CRAIG HANSEN

Telephone Number: 8970
Received: Thu 1/12/95 7:14 AM

Length Played: 00_m12_s
Total Length: 00_m46_s

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A FIRST LOOK AT NETWARE 4.1

This is the version you've been waiting for.

NetWare 4.1 is the version of NetWare that customers have been waiting for. The product includes many new features and enhancements that make the product suitable for businesses of all sizes who are looking for a stable network operating system that offers simplified administration and maintenance, is easy to use, and lowers the cost of computing.

NetWare 4.1 is the most solid product ever produced by Novell. NetWare 4.1 is built on a platform that has been evolving for over 11 years to meet the changing requirements of Novell's customers. Over 80 percent of the code in NetWare 4.1 is from NetWare 3.12. These facts should put customers at ease regarding the stability, reliability and capabilities of NetWare 4.1.

Michael Knutson of Hewitt Associates, an international benefits consulting and actuarial firm and a NetWare 4.1 beta test site concurs. "NetWare 4.1 was rock solid during our testing and evaluation of the product. NetWare 4.1 also offers the directory features and tools we have been waiting for to roll out the product enterprise wide."

With 11 years of experience, you would expect NetWare 4.1 to offer the features needed by today's demanding computing environments. And you're right. We found NetWare 4.1 to offer many new features that help simplify network administration and maintenance, make the product easy to use, and reduce the cost of ownership for customers of all sizes. Let's look at each of these areas in more detail.

Simplified Network Administration and Maintenance

Centralized administration of a mixed NetWare 4 and NetWare 3 network environment is made easier using the NetWare 4 Administration utilities including NetSync. NetSync automatically synchronizes updates to user and group objects made on a NetWare 4.1 server to the NetWare 3 servers. The utility allows for the easy and gradual migration from NetWare 3 to NetWare 4.

In addition, a number of new utilities help simplify network administration by letting administrators create, move, or modify objects, move subtrees, rename containers, merge directory trees and rename a directory tree. DSMERGE is one of the product's new utilities that lets administrators merge two separate directory trees into a single tree. DSMERGE can also be used to rename a tree, to verify that all servers in

the tree are responding correctly, and to view time synchronization information.

NetWare 4.1 is a stable, full-featured network operating system that meets the needs of small businesses and large corporations

Ease of Use

A main focus for Novell over the last 11 years has been making NetWare easier to use. With NetWare 4.1, Novell has reached a new milestone, adding many new features that make NetWare 4.1 easier to use for administrators and users.

NetWare 4.1 now offers two installation options—simple and custom. The simple installation automatically configures many of the operating system's parameters making installation easier and faster. The simple installation configuration creates a simple, one-level NetWare Directory Services™ (NDS™) organization that can be updated later, if necessary, using the NetWare Administrator utility. This configuration is ideal for many small to mid-sized businesses who only require a one-level directory tree. The custom installation allows you to fully customize the NetWare 4.1 installation to meet every network need.

The NetWare Administrator and NetWare user tools, that control the most common functions of NetWare, have MS Windows and OS/2 graphical user interfaces, greatly improving these tools' effectiveness and ease of use. Now, many of the functions that used to take two or three steps—using the old text-based utilities—can be done in a single step by pointing and clicking.

For customers who are migrating from previous versions of NetWare or other vendors' network operating systems, Novell offers a variety of tools with NetWare 4.1 to make this process as easy as possible. These products include: across-the-wire (new server) upgrade, across-the-wire (same server), and in-place upgrade.

NetWare 4.1 also makes it easy to support heterogeneous computing environments with DOS, MS Windows, Macintosh, UNIX and OSI clients. New client features in NetWare 4.1 include:

- A Macintosh client with access to NDS that allows for better integration of Macintosh computers in a NetWare network.
- Auto-reconnect functionality that allows client workstations to be dynamically reconnected to the network or servers when a connection is lost.
- Support for mobile IPX allowing client workstations to intelligently respond to error messages during lost hardware and software connections to the network.
- Support for the TCP/IP protocol stack at the client workstation that allows for easier integration of DOS and MS Windows workstations into UNIX environments. Support for TCP/IP at the server and across the network is also supported.

Lower Cost of Ownership

By simplifying administration, NetWare Directory Services (NDS) improves the productivity of administrators and users, dramatically reducing the cost of ownership. NDS provides a single point of network administration for businesses of all sizes, greatly simplifying the administration process. With NDS, users can access any network service without having to know the physical location or name of the server that stores the service.

NetWare 4.1 includes file compression for files that are saved on the server. Many customers have paid for the cost of NetWare from this feature alone by not having to buy or delaying the purchase of additional storage devices. A benchmark done by Novell indicates that NetWare 4.1 can reduce 600MB of files to as little as 222MB.

The Final Word

NetWare 4.1 is a stable, full-featured network operating system that meets the needs of small businesses and large corporations. The product's new features simplify administration and maintenance, make the network easy to use and lower the cost of ownership. This operating system is highly recommended for new customers of all sizes, customers looking for the right time to upgrade and customers who are unhappy with their current network operating system. ■

For more information on NetWare 4.1, call 1-800-554-4446 or 512-795-8095. Or, Internet access via http://www.netware.com

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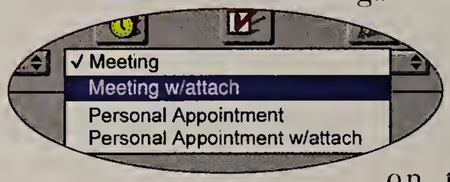
How to get eight people in the same conference room at the same time.

(Bagels and donuts not required.)



If you've ever tried to arrange a meeting, you know the degree of difficulty is somewhere between nailing a triple gainer with a half twist and eliminating the national debt. But all that's about to change. Introducing GroupWise™ 4.1, a new member in the family of Novell® GroupWare. GroupWise capitalizes on the advancements of its predecessor—WordPerfect® Office 4.0—and offers features not found in any of its competitors. For instance, with the Busy Search feature of the integrated E-mail calendar/schedule program, you can quickly determine the best time for 8 (or 80) people to convene. Regardless of their operating systems. GroupWise integrates task management, so you can delegate an assignment, track its acceptance and manage its completion before the first attendee arrives. And since GroupWise supports NetWare Directory Services™—you can manage NetWare® 4.1 and GroupWise directory services all from a single point of administration. With GroupWise, we've made it incredibly easy to set up a meeting. Of course, you still have the daunting task of keeping people awake in one. Call **1-800-284-7949** for your nearest certified reseller or to learn more about Novell GroupWare, the perfect way to put people together with information.

GroupWise™

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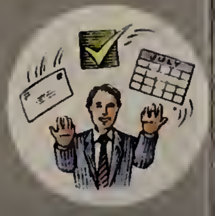

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NOVEL

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Banyan takes new steps to fulfill potential

Y KEVIN FOGARTY

Westborough, Mass.

Banyan Systems, Inc. has recast itself once again -this time to become a leader in the market for enter-rise network services that run over users' installed et operating systems (NOS).

Under the leadership of a new business develop-ent executive, the firm has reorganized itself into ive groups that can each focus on developing their wn enterprise network services products. The move s intended to help Banyan speed new products to mar-et and allow for more aggressive product marketing.

John Paul, senior vice president for business evelopment, arrived at Banyan six months ago from ompaq Computer Co. to try his hand at differentiat-g Banyan from competitors such as Novell, Inc. and icrosoft Corp. Paul said he moved to Banyan ecause it is a company that is "big enough to matter ut small enough to change."

He was successful at Compaq in helping it develop pecialized products for vertical markets, retaining an dge for Compaq in the highly commoditized per-onal computer and server markets.

While the bulk of Banyan's revenue still comes om the company's VINES NOS, Banyan is moving ut of the pure NOS business with its Enterprise Net-ork Services (ENS) product set. These products,

See **Banyan**, *page 18*

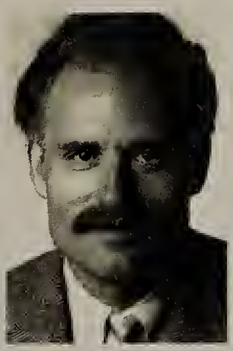
NetFRAME premieres new family of superservers

To offer lower price point plus high-end features.

BY MARGARET DORNBUSCH

Milpitas, Calif.

NetFRAME Systems, Inc. this week will roll out both a new family of superservers designed to offer high-end functions at a lower price, as well as the company's most powerful server yet.



NetFRAME's Amdahl *says the 8400 devices will give users the opportunity to upgrade to high-end products later.*

The new 8400 ClusterServer series includes the single-bus NF8410, dual-bus NF8420 and quad-bus NF8440 servers.

The servers inherit many enterprise net features found in NetFRAME's higher end 8500 series servers, bringing these technologies to a broader range of customers.

The features include multiprocessing, redundant power systems, error-checking memory, and support for multiple Pentium and 486 processors.

The 8400 series replaces the company's NF250/2500 and NF450/4500 servers, which can be upgraded in the field as 8400 systems.

The servers could help NetFRAME fill the gap between traditional personal computer-based servers and Reduced Instruction Set Computer-based systems, said Mike Rothman, program director for META Group, Inc. in Reston, Va.

Each 8400-class machine can be configured with two to nine clustered I/O and application processors.

"We've provided customers with a migration path within our enterprise servers that allows them to scale up the capacity of the I/0 subsystems incrementally," said Carl Amdahl, chairman and chief executive officer with NetFRAME.

The 8400s, like the 8500s, can run Novell, Inc.'s NetWare 3.X and 4.X, as well as Unix System V. Support for Microsoft Corp.'s Windows NT 3.5 on the 8400 family should occur by late summer and will be extended to NetFRAME's other machines at a later time, Amdahl said.

The 8400s, like the 8500 servers, support Ethernet, token-ring and Fiber Distributed Data Interface connections.

The 8400 models can handle from 250 to 1,000 users, while the higher end machines are only limited by the network operating system limitations.

NetFRAME's new high-end model, the 100-MHz Pentium-based 8540 server, tops off NetFRAME's 8500 ClusterServer series. The system offers a quad-bus design, clustered symmetrical multiprocessing and enhanced fault tolerance.

The 8540 supports up to 12 clustered processors, including application and I/O processors, Amdahl said. The server features 8-bit error correction and NetFRAME's Gemini fault-tolerance technology, which keeps the machine running, even if a processor fails.

The 8440 costs about $40,000; the 8420 costs about $30,000; and the entry-level 8410 is priced at around $25,000. The 8540 costs about $120,000.

ⒸNetFRAME: (408) 944-0600.

Reality ✓ Check

Product: eXceed
Company: Hummingbird Communications

The benefits:
- Fast, graphical access to Unix applications and data.
- Easy, centralized installation.
- Available on multiple desktop platforms.

The drawbacks:
- Not available on CD-ROM.
- Lacks support for IBM's AIX operating system.
- Macintosh desktop not yet available.

The user view:
"A lot of the emulation systems are slow, but Hummingbird even starts up fast. And it's stable; we never have crashes."
Jerry Croce

Hummingbird buzzes past the pack

BY PEGGY WATT

Mountain View, Calif.

Like its namesake, Hummingbird Communications, Ltd. beats a fast and colorful flight – in this case, to dominate the personal computer-based X Window server market.

With the release this month of Version 4.1 of its eXceed 4 Windows NT software, Hummingbird reinforces its claim of providing the broadest desktop access to Unix sessions and applications across a net. The company already supports Unix, VMS, Windows 3.1, DOS and OS/2 desktop systems, and is considering an Apple Macintosh version.

"We've seen a real boost in interest in the Windows NT platform over the past six months" following the release of Windows NT 3.5, said Peter Auditore, Hummingbird's marketing director.

New to eXceed 4 Windows NT are a programmable toolbar and graphical FTP client.

Hummingbird's eXceed 4 Windows NT runs as a native, 32-bit Windows NT application on Intel Corp., MIPS Computer Systems, Inc. and Digital Equipment Corp. (Alpha) processor-based desktops, providing users with access to electronic mail and other Unix programs. As with other versions of eXceed, the new software lets users cut and paste between windows on the desktop and provides a TCP/IP stack.

The Windows NT version mirrors features of eXceed 4 Windows, which runs on Windows 3.1. Both packages include support for Hummingbird's eXceed Basic scripting language and Xpress remote dial-up access add-on. Both implementations provide administration tools such as activity logs, two levels of password protection, and the Remote Configuration Administrator, which lets network administrators simultaneously install eXceed on multiple PCs.

New to eXceed 4 Windows NT are a programmable toolbar and graphical File Transfer Protocol client.

Users praised Hummingbird's software for its easy installation as well as its smooth and speedy graphics handling. Jerry Croce, supervisor of network systems at Ericsson, Inc. in Cypress, Calif., said the Windows NT version is so similar to the Windows version that it was easy to implement when his division added Windows NT workstations.

"[The Hummingbird software] was much easier to set up and configure" than others that were tested, said Croce, whose division runs the X Window server software on more than 100 486-based desktops with Windows NT, Windows, and OS/2.

Users access E-mail and a variety of Sun Microsystems, Inc. applications through eXceed links to Sun servers, he said.

Clearly, Hummingbird flies in a growing market. PC X Window server sales grew about 40% in each of the past two years, said market research firm International Data Corp. (IDC) of Framingham, Mass. IDC projects that just under one million units will sell this year and 1.4 million will sell next year. Hummingbird claims about one-third of the current market.

Now shipping, Version 4.1 of eXceed 4 Windows NT costs $545 for a single copy; site licensing is available, as well.

ⒸHummingbird: (905) 470-1203.

BRIEFS

Simware, Inc. last month released an update to its SimPC **remote access program,** which supports additional terminal emulations, faster modems and other new features. SimPC 7.0 supports up to 115K bit/sec communications, VT-220 and ANSI terminals, as well as The Wollongong Group, Inc.'s Pathway TCP/IP stack. SimPC is priced at $395; site licenses are available now.

Simware: (800) 267-9991.

FTP Software, Inc. of Andover, Mass., has announced plans to acquire **Keyword Office Technologies, Inc.** of Calgary, Alberta. FTP, which develops TCP/IP communications applications, will buy Keyword for $4 million (Canadian). FTP will add Keyword's KeyView, KeyPak and PostFAX document viewing and management products to its own product suites.

Checkit, a tool for monitoring as many as five **IBM LAN Server** domains and more than 1,000 servers from a single workstation, is available now from **Client Server Networking, Inc. (CSN).** The $249 OS/2-based utility lets net managers monitor available and failed servers, as well as trace and analyze server performance. It works with CSN's Watchit, which tracks capacity and performance.

CSN: (203) 233-2951.

Sylvan Learning Systems, Inc. has been certified to deliver **Novell, Inc.**-authorized testing for Certified Novell Engineers, Certified Novell Administrators and Certified Novell Instructors at its more than 200 teaching centers in North America. The tests will be identical to those given directly by Novell but will be more widely available due to the deal.

Sylvan: (800) 733-8378.

Windows Connectivity Forum

An eye-catching Windows BBS posting

By Joel Diamond
Technical director
WUGNET
Windows User Group Network
76702.1023@CompuServe.com

For those of you who believe there is no such thing as a good Windows-based bulletin board system (BBS), I have some news for you. There is at least one product that can stand up to any commercial BBS or shareware package around.

The product is so good that an entire third-party add-on market has surfaced around it.

The product, PowerBBS for Windows from PBBS, was first introduced several years ago and has grown since that time into a full-featured and powerful business tool.

The recent Version 3.0 release added support for telnet and Serial Line Internet Protocol (SLIP) connectivity (check out what it's like to telnet into a PowerBBS host over the Internet via newtom.com). The newest edition, Version 4.0, introduces a new client program called PowerAccess that allows users to interact with the BBS via a Windows multimedia interface.

The interface can include custom icons, buttons, shapes and graphics as defined by the PowerBBS host sysop, along with predefined WAV/MIDI files.

PowerAccess, developed by Russell Frey, permits a caller to perform multiple on-line tasks that include conducting file transfers, maintaining a teleconference with another user and reading electronic mail or bulletins simultaneously.

PowerAccess 1.0 is free of charge and can be downloaded via the PACC10.ZIP file on the WUGNET's Windows Networking Vendors Forum (GO WINETA) in Library 4. A special shareware edition of PowerBBS 4.0 is also expected to be available in this library.

A fully functional shareware version of PowerBBS 4.0 will be released soon on the WINCON forum, as well.

PBBS can be reached at (800) 242-4775.

AROUND THE FORUM

Here is a sampling of some of the items recently posted for discussion on WINCON.

To join in the discussion, drop by WINCON Section 8 for Hot News.

- Microsoft Corp. is now officially shipping SourceSafe 3.1, a version control/configuration management system for Windows developers that incorporates groupware developer support. Microsoft is also working on an add-on that will extend the product to support both Windows and Unix systems.
- VTEL Corp. of Austin, Texas, has announced WinMax, a Windows interface for the company's group conferencing systems. A Windows 95 implementation of WinMax will be added by year end. VTEL can be reached at (512) 314-2594.

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To participate on the Windows Connectivity Forum, type **Go Wincon** at any **!** prompt on CompuServe. For those of you who are not CompuServe subscribers, *Network World* and the Windows Users Group Network are offering a free membership sign-up by calling (800) 524-3388. Ask for Operator 426.

NET RESULTS

by Mark Gibbs

Taking a closer look at the emperor's new paradigm

I have always disliked the term "paradigm shift."

Like much of the buzz-speak that afflicts our industry, the word "paradigm" has become so used and abused that we tend to forget its real meaning.

For those of you who might have been too busy struggling to make paradigm shifts actually work, here's what *Webster's Dictionary* has this to say:

"par-a-digm: 1) EXAMPLE, PATTERN; esp: an outstandingly clear or typical example or archetype..."

As for "shift," I won't bother to quote Webster's, as the word means pretty much what you'd think — a change in direction.

But of the many products, upgrades, architectures and marketing hyperbole that I have seen portrayed over the last few years as paradigm shifts, few were outstanding in their details or clear in their conceptualization. Nor were they typical of anything other than the rampant arrogance of some corporate lackey's fevered mind that was obviously unclouded by concerns of usability or practicality.

(Whew. I feel much better now.)

The fact is that in the computer business in general, and the network business in particular, we are so used to a rapidly evolving environment that vendors try to give products an edge by dressing them up as different. This is the marketing equivalent of the emperor's new clothes.

The foregoing tirade was kicked off in a discussion with a *Network World* editor about who was doing what and to whom in the network industry. We concluded that there are one or two vendors each month that try to pitch themselves as announcing a paradigm shift.

And what foundation is there for such claims? For most, the answer is none.

In fact, consider the terms "new" and "improved." Both are frequently used when the vendor really means "revised" and "fixed."

We live in an age of high-tech snake oil selling. Perhaps the vendors don't actually lie, but they have raised obfuscation of the truth to a fine art.

For example, the branding of products with the slogans "Yes, it runs with NetWare" and "Microsoft Windows-compatible" would seem to offer the buyer some kind of assurance of compatibility. The former is a phrase licensed by Novell, Inc., and the testing for compatibility is done by the company being certified. In Microsoft's case, Windows compatibility seems to mean that the product shouldn't fail more than once an hour.

Any kind of self-certification by the vendor that allows the firm to put a much bigger firm's logo on the box is not really certification at all — it is a statement of best intentions.

Marketers play with words to differentiate their products from the competition's offerings. That's fine until the vendors see that they are pulling the wool over their own eyes, let alone the end users'.

But you poor net managers. You have been reading nonsense about paradigm shifts for so long and have seen it backed up by so many industry pundits that each new wart on a revitalized product's carcass looks fresh and new.

Those networking products that I would say created real paradigm shifts are few and far between: Novell's NetWare, Banyan's StreetTalk, IBM's Token-Ring and perhaps a dozen more. The rest are historical footnotes — important but not central to networking's evolution.

The acid test of a paradigm shift is whether the product that is supposed to embody the shift actually changes the way we run our networks and helps out our business.

So the next time a vendor or analyst offers you something called a paradigm shift, lift up its new clothes to see the naked reality of the product.

It will usually be just more of what you've seen before.

➾Gibbs is a consultant and writer in Ventura, Calif. He can be reached at (800) 622-1108, Ext. 504, or on the Internet at mgibbs@gibbs.com.

Banyan

Continued from page 17

including Banyan's highly regarded StreetTalk directory services software, are being extended to work across multiple desktop operating systems and NOSes.

Banyan hopes to pump up sales of StreetTalk and other ENS offerings by seeding the software development industry with free copies of StreetTalk code included in a software bundle called the Directory Application Programming Interface (DAPI). The idea is to encourage third-party developers to build StreetTalk-compliant applications such as electronic mail and databases that will, in turn, persuade users to deploy StreetTalk.

Novell has a similar theory about its NetWare Directory Services (NDS), but the company plans to sell its NDS software developers' kits.

The fact that DAPI is free of charge and includes not only StreetTalk code, but also a directory database and assorted access tools, gives Banyan's directory services development package an advantage over Novell's, said Mike Rothman, analyst at the META Group, Inc. consultancy in Reston, Va. Still, he expects that most application vendors will hedge their bets by supporting both vendors' technologies as well as any other good directory services.

Banyan will also try to make ENS more attractive by releasing a series of new applications for network management, file backup and software distribution.

The first of these, Outlook for HP OpenView, will debut in April (*NW*, Feb. 13, page 1) as the first product in Banyan's Distributed Enterprise Management Architecture net management plan.

Banyan will also release at midyear the Enterprise Backup and Restore program and an enterprise-level software distribution engine. Both products have been in development for more than a year.

The company also has on its delivery schedule a version of ENS for SunSoft, Inc.'s Solaris and a new version of ENS for NetWare with smaller memory requirements, Paul said.

The new products will beef up Banyan's ENS offerings considerably, but Paul plans two other changes that could be just as momentous: Banyan will end its legacy of delayed software releases by publishing delivery dates for new products and doing what is necessary to ship its products on time. It will also try to raise its traditional low profile with an aggressive marketing campaign to push the idea of independent network services and ENS itself, according to Paul.

"In the software development process, there are three variables — quality, function and time to market — and you can only control two of those at a time," Paul said. "We will set release dates and maintain quality."

Banyan will publish release dates for its new products, along with the two or three product features it thinks have the widest appeal, Paul said. The company will also plan, but not announce, several other features. If the development cycle is taking too long, it will drop unannounced features, rather than delay release of a product, he added.

"We will provide software in a predictable time frame with the functions that really matter," Paul said.

In revving up its marketing campaign, Banyan will strive to be more consistent in what it tells users about its products and future plans.

"In the past, after talking about one thing for a few months, we would figure everyone had heard that message and revamp it," Paul explained. "People thought we had switched strategy. Now we'll have a more consistent and visible message to say where Banyan's future is." ◼

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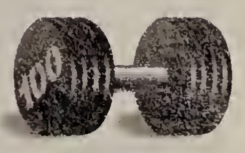

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OpenView

Continued from page 15

View alternatives – yet.

"Due to the Tornado delay, we're wondering whether or not [OpenView] will stay leading edge," Waldbusser said. "But at this time, we're not looking at moving to other platforms because we don't see at this point that they are any better. Although if we see that change, we'll certainly be looking at them."

Martin Marietta Corp., however, is more anxious. The company is merging with another giant defense contractor, Lockheed Corp., and is impatient for the domain management, database replication and event-sharing capabilities that Tornado promises.

"Are we abandoning OpenView?" asked Frank Belland, senior communications consultant at Martin Marietta in Orlando, Fla. "No. But you can bet we will definitely look at other technologies. We need something to get us over the hump until Tornado emerges."

WARNER

Meanwhile, HP rivals IBM and SunSoft are picking up on the Tornado plight. IBM is currently distributing literature to its NetView for AIX field sales force that notes the Tornado delay, according to William Warner, vice president of enterprise management in IBM's Network Software Division.

"Most of what they've slipped on we've already got [in NetView for AIX]," Warner said. "We will target our marketing programs at customers who expressed concern, who are reaching the technology limits of OpenView, and who need the greater sophistication that NetView and the rest of the SystemView family of products offers."

IBM, however, has no plans to offer a version of NetView for AIX for HP's HP-UX operating system, Warner said. That would help OpenView users run their management applications on the IBM framework.

SunSoft noted the Tornado delay at its Solstice announcement in New York three weeks ago. But the company is not aggressively pursuing OpenView shops "other than to emphatically say that we are shipping the Solstice products," a SunSoft spokesman said.

But SunSoft does plan to release an HP-UX version of the Solstice Enterprise Manager later this year, the spokesman said. ◻

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Circle Reader Service #**31**

California

Continued from page 15

planted in Los Angeles roadways. The on-screen display, which is updated every 90 seconds, shows a map with streets highlighted in red, yellow or green to indicate traffic is stopped, congested or clear.

"The idea is that travelers can avoid making a bad situation on the roads worse by avoiding the trouble spots before they get in their cars," Loveland said.

More than 1,000 bus and light rail stops and schedules can be printed by entering local intersections and the time the user wants to leave. That application, supported by another IBM mainframe, has been handling about 25,000 requests every day.

A Digital Equipment Corp. VAX operates the ride-sharing program, which so far includes over 600,000 users' names. From the kiosk, users can enter themselves as a ride-share candidate or pull up a list of local candidates.

"We can't build enough freeways for the increasing amount of cars, so we have to make better use of the systems we have."

While the network is now up and running, setting it up around the ruins of the earthquake was a challenge.

"The people setting Smart Traveler up had to deal with the same traffic and logistical nightmares everyone else was living with," Loveland said. "If there hadn't been tight collaboration between the 30 or so people on our team, PacBell and the other state agencies involved, we never could have pulled it off."

As for the future, CALTRANS is studying the feasibility of using the Internet to carry transportation information to kiosks over a wider swath of Southern California. A test bed of 100 sites could be in place by the end of the year. A statewide version of Smart Traveler is also in the works.

In addition, the state will soon provide access to Smart Traveler information via dial-up lines from home-based personal computers. Smart Traveler may some day be accessible from an automobile's computer system and be read from an onboard computer screen.

"We've had multiple requests to set this kind of system up in other congested areas, and the federal government is interested in using it elsewhere in the U.S.," Loveland said. "We can't build enough freeways for the increasing amounts of cars, so we have to make better use of the systems we have." ◻

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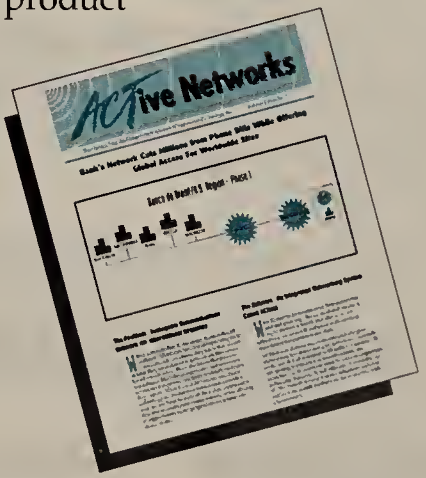

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AGENDA

9:00-11:50 MORNING SESSIONS

- **Introduction**
  Kirk Campbell, President & CEO
- **Transition to the Mass Market Era**
  David C. Moschella, Senior V.P., Worldwide Research
- **User Information Technology: Results of IDC's Annual Global IT Survey**
  David Vellante, Senior V.P., Systems, Storage & Software Research
- **Technology for the Next Wave**
  John Gantz, Senior V.P., Desktop Research

A 1:15-1:45	B 1:50-2:50	C 3:15-3:45	D 3:50-4:50
ROOM 1			
Migration to High-Speed LANs *Lee Doyle*	Remote Access – Panel Discussion	Telecommunication: Convergence on the Information Highway *Gigi Wang*	Internet – Panel Discussion
ROOM 2			
Personal Systems: Opportunity, Dynamics, Competition *Bruce Stephen*	Meeting Customer Demand for PCs – Panel Discussion	PCMCIA: A Key Enabler of Mobile Computing *Crawford DelPrete*	Mobile Computing Without Wires – Panel Discussion
ROOM 3			
Midrange Shift to Low Cost Channels *Dorothy Rosenthal*	Building Systems and Servers Market Power– Panel Discussion	The Impact of Internet Adoption on the Systems and Servers Business *Debra Goldfarb*	The Application of Systems Technologies on the IWay – Panel Discussion
ROOM 4			
The Changing Structure of the Software Industry *Anthony Picardi*	Workgroup and Client/Server Applications – Panel Discussion	Microsoft Targets the Enterprise – Should Everyone Else Run and Hide? *David Card*	Systems, Software, and Tools for Emerging Operating Environments – Panel Discussion
ROOM 5			
Services Opportunities and Vertical Markets *Mike Melenovsky*	Managing Client/Server Complexity – Panel Discussion	What Makes Mass Markets Tick? *Andy Bose*	Consumer Technology Direction – Panel Discussion
ROOM 6			
Emerging Markets in Perspective *David Moschella*	Personal Computer Markets in the Asia/Pacific Region – Panel Discussion	Opportunities in the Middle East and Africa *Davis Blair*	Distribution Channel Strategies for Latin America – Panel Discussion

Special Guest Moderators

Bob Metcalf, Vice President of Technology, International Data Group
Pat Ferrell, President, Infotainment World
John F. Rousseau, Executive Vice President, Infotainment World
Paul Gillin, Editor, Computerworld
Michael Fitzgerald, Senior Editor, Mobile Computing, Computerworld

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1 Industry: (check one only)

- 01. ☐ Manufacturers (other)
- 02. ☐ Finance/Banking
- 03. ☐ Insurance/Real Estate/Legal
- 04 ☐ Healthcare Services
- 05 ☐ Hospitality/Entertainment/ Recreation
- 06. ☐ Media/TV/Cable/Radio/Print
- 07. ☐ Retail/Wholesale Trade/Business Services
- 08 ☐ Transportation
- 09 ☐ Utilities
- 10. ☐ Education
- 11. ☐ Process Industries (Mining/Construction/ Petroleum Refining/ Agriculture/Forestry)
- 12. ☐ Government Federal/State/Local
- 13. ☐ Military
- 14 ☐ Aerospace
- 15. ☐ Consultants (Independent)
- 16. ☐ Carriers/Interconnects
- 17. ☐ Manufacturers (Computer/ Communications)
- 18. ☐ Systems/Network Integrators (VAR/VAD/ VAN/Systems/Software Houses)
- 19. ☐ Distributors Communications/ Computers
- 20. ☐ Other______________

2 What is your Job Function? (check one only)

NETWORK IS Management:

- 1. ☐ Networking Management
- 2. ☐ LAN Management
- 3 ☐ Datacom/Telecom Management
- 4 ☐ IS,IT,MIS,Systems Management
- 5. ☐ Engineering Management
- 6. ☐ Corporate Management (CIO,CEO,PRES,VP, DIR,MGR,Financial Management)
- 7. ☐ Consultant (Independent)
- 8. ☐ Other______________

3 What is the total number of sites for which you have purchase influence? (check one only)

- 1. ☐ 100+
- 2. ☐ 59 - 99
- 3. ☐ 20 - 49
- 4 ☐ 10 - 19
- 5. ☐ 2 - 9
- 6. ☐ 1
- 7. ☐ None

4 What is your scope and involvement in purchasing decisions for network products & services for your enterprise?

A. SCOPE (check one only)
- 1. ☐ Corporatewide
- 2. ☐ Multienterprise
- 3. ☐ Departmental
- 4 ☐ None

B. INVOLVEMENT (check all that apply)
- 1. ☐ Recommend/Specify
- 2. ☐ Approve
- 3. ☐ Evaluate
- 4. ☐ Determine the need
- 5. ☐ None

5 Check ALL that apply in columns A and B:

A: I am involved in the purchase of the following products/services.
B: I plan to purchase the following products/services.

A B
☐ 100 ☐ **LOCAL AREA NETWORKS**
- ☐ 01. ☐ Local Area Networks
- ☐ 02. ☐ Network Operating Systems Software (NOS)
- ☐ 03. ☐ LAN Storage Devices (optical, tape, disk, etc.)
- ☐ 04 ☐ LAN Backup Systems (optical, tape, disk, etc.)
- ☐ 05. ☐ Network Test Equipment/Diagnostic/ Management Software
- ☐ 06. ☐ Hubs/Intelligent Hubs
- ☐ 07. ☐ Cables, Connectors, Baluns
- ☐ 08. ☐ UPS
- ☐ 09. ☐ Network Adapter Boards/Network Interface Cards
- ☐ 10. ☐ Peer-to-Peer LANs
- ☐ 11. ☐ Wireless Networks
- ☐ 12. ☐ SNMP Network Management
- ☐ 13. ☐ ATM Switches
- ☐ 14. ☐ Remote LAN Access
- ☐ 15. ☐ Ethernet Switches
- ☐ 16. ☐ LAN Servers
- ☐ 17. ☐ Superservers
- ☐ 18. ☐ Remote Access/Communications Servers

A B
☐ 101 ☐ **REMOTE/WIRELESS COMPUTING**
- ☐ 19. ☐ Laptops
- ☐ 20. ☐ Notebooks
- ☐ 21. ☐ PDAs
- ☐ 22. ☐ PCMCIA
- ☐ 23. ☐ Mobile Data Services
- ☐ 24. ☐ Wireless Data Services
- ☐ 25. ☐ Wireless Data Equipment

A B
☐ 102 ☐ **INTERNETWORKING**
- ☐ 26. ☐ Bridges
- ☐ 27. ☐ Routers
- ☐ 28. ☐ Gateways
- ☐ 29 ☐ Bridge/Routers

A B
☐ 103 ☐ **COMPUTERS/PERIPHERALS**
- ☐ 30. ☐ Micros/PCs
- ☐ 31. ☐ Minis
- ☐ 32. ☐ Mainframes
- ☐ 33. ☐ Workstations
- ☐ 34 ☐ Front-End Processors
- ☐ 35. ☐ Terminals
- ☐ 36. ☐ Printers
- ☐ 37. ☐ Cluster Controllers
- ☐ 38. ☐ Fax Machines
- ☐ 39. ☐ Monitors

A B
☐ 104 ☐ **SOFTWARE/APPLICATIONS**
- ☐ 40. ☐ Network Management
- ☐ 41. ☐ Systems Management
- ☐ 42 ☐ Micro to Mainframe
- ☐ 43. ☐ Security
- ☐ 44. ☐ Communication/Terminal Emulation
- ☐ 45. ☐ Word Processing
- ☐ 46. ☐ Operating Systems
- ☐ 47. ☐ Client Server Applications Development

A B **SOFTWARE/APPLICATIONS** (cont'd)
- ☐ 48. ☐ Applications Development
- ☐ 49. ☐ Data Base Management/RDBMS
- ☐ 50. ☐ Spreadsheet
- ☐ 51. ☐ Groupware
- ☐ 52. ☐ EDI
- ☐ 53. ☐ E-Mail
- ☐ 54. ☐ Windows/Graphical User Interface
- ☐ 55. ☐ 4GL Development/Case
- ☐ 56. ☐ Multimedia
- ☐ 57. ☐ Graphics/DTP
- ☐ 58. ☐ Remote Access
- ☐ 59. ☐ Imaging
- ☐ 60. ☐ Suites
- ☐ 61. ☐ Middleware
- ☐ 62. ☐ Document Management

A B
☐ 105 ☐ **WIDE AREA NETWORKS EQUIPMENT & SERVICES**
- ☐ 63. ☐ Modems (9.6K bps and over)
- ☐ 64. ☐ Modems (under 9.6K bps)
- ☐ 65. ☐ T-1/T-3 Multiplexers
- ☐ 66. ☐ T-1/T-3 Services
- ☐ 67. ☐ Inverse Multiplexers
- ☐ 68. ☐ Fractional T-1
- ☐ 69. ☐ SMDS
- ☐ 70. ☐ ATM (Asynchronous Transfer Mode)
- ☐ 71. ☐ Matrix Switches
- ☐ 72. ☐ Packet Switches
- ☐ 73. ☐ Protocol Converters
- ☐ 74. ☐ Diagnostic/Test Equipment
- ☐ 75. ☐ DSU/CSU
- ☐ 76. ☐ Microwave
- ☐ 77. ☐ Fax Boards/Modems
- ☐ 78. ☐ VSAT
- ☐ 79. ☐ Fiber Optic
- ☐ 80. ☐ Satellite
- ☐ 81. ☐ ISDN
- ☐ 82. ☐ PBXs (over 1000 lines)
- ☐ 83. ☐ PBXs (under 1000 lines)
- ☐ 84. ☐ Automatic Call Distributors
- ☐ 85. ☐ Voice Messaging Systems
- ☐ 86. ☐ Videoconferencing/Teleconferencing
- ☐ 87. ☐ Voice Response/Processing
- ☐ 88. ☐ Dedicated Leased Line
- ☐ 89 ☐ Switched Data
- ☐ 90. ☐ E-Mail/Online Services
- ☐ 91. ☐ Image Processing
- ☐ 92. ☐ 800/900 Services
- ☐ 93. ☐ WATS/MTS
- ☐ 94 ☐ International
- ☐ 95. ☐ Virtual Networks
- ☐ 96. ☐ Frame Relay
- ☐ 97. ☐ Value Added Services
- ☐ 98. ☐ CIT (Computer-Integrated Telephony)

☐ 99 ☐ None of the above (1-98)

6 What is the total number of LANS, Workstations/Nodes: At this Location/ In your Organization?

At This Location: LANs		Workstations/ Nodes	Entire Organization: LANs		Workstations/ Nodes
1. ☐	5000+	☐	1. ☐	5000+	☐
2. ☐	1,000 - 4,999	☐	2. ☐	1,000 - 4,999	☐
3. ☐	100 - 999	☐	3. ☐	100 - 999	☐
4. ☐	50 - 99	☐	4. ☐	50 - 99	☐
5. ☐	10 - 49	☐	5. ☐	10 - 49	☐
6. ☐	9 or less	☐	6. ☐	9 or less	☐
7. ☐	None of the above	☐	7. ☐	None of the above	☐

7 Check ALL that apply in columns A and B:

A: The following network platforms are currently installed.
B: The following network platforms are currently planned.

A B
☐ 55 ☐ **NETWORK ARCHITECTURES**
- ☐ 01. ☐ SNA
- ☐ 02. ☐ DECNET
- ☐ 03. ☐ MAP/TOP
- ☐ 04. ☐ TCP/IP
- ☐ 05. ☐ DCA (Unisys)
- ☐ 06. ☐ X.25
- ☐ 07. ☐ Novell IPX/SPX
- ☐ 08. ☐ APPC/APPN/LU6.2
- ☐ 09. ☐ NETBIOS
- ☐ 10. ☐ OSI
- ☐ 11. ☐ APPLETALK
- ☐ 12. ☐ NSF
- ☐ 13. ☐ XNS
- ☐ 14. ☐ OTHER______________

A B
☐ 56 ☐ **NETWORK OPERATING SYSTEM**
- ☐ 15. ☐ LOCALTALK (APPLETALK)
- ☐ 16. ☐ BANYAN (VINES)
- ☐ 17. ☐ DCA (IRMALAN)
- ☐ 18. ☐ DCA (10-NET)
- ☐ 19. ☐ IBM (LAN SERVER)
- ☐ 20. ☐ IBM (PC LAN PROGRAM)
- ☐ 21. ☐ MICROSOFT (LAN MANAGER)
- ☐ 22. ☐ NOVELL (NETWARE, 2X, 3X, 4X)
- ☐ 23. ☐ PROTEON (PRONET)
- ☐ 24. ☐ 3COM (3+, 3+OPEN)
- ☐ 25. ☐ ARTISOFT (LANTASTIC)
- ☐ 26. ☐ HAYES (LANSTEP)
- ☐ 27. ☐ DEC (PATHWORKS)
- ☐ 28. ☐ WINDOWS NT/ADVANCED SERVER
- ☐ 29. ☐ OTHER______________

A B
☐ 57 ☐ **LAN ENVIRONMENT**
- ☐ 30. ☐ 4M TOKEN RING
- ☐ 31. ☐ 16M TOKEN RING
- ☐ 32. ☐ ARCNET
- ☐ 33. ☐ ETHERNET
- ☐ 34. ☐ 100 M ETHERNET
- ☐ 35. ☐ STARLAN
- ☐ 36. ☐ FDDI
- ☐ 37. ☐ LOCAL TALK
- ☐ 38. ☐ 10BASE-T
- ☐ 39. ☐ ATM
- ☐ 40. ☐ OTHER______________

A B
☐ 58 ☐ **COMPUTER OPERATING SYSTEM**
- ☐ 41. ☐ DOS
- ☐ 42. ☐ UNIX/XENIX/AIX
- ☐ 43. ☐ OS/2
- ☐ 44. ☐ OS/2.X
- ☐ 45. ☐ IBM MVS
- ☐ 46. ☐ IBM VM
- ☐ 47. ☐ DIGITAL VMS
- ☐ 48. ☐ MACINTOSH
- ☐ 49. ☐ WINDOWS
- ☐ 50. ☐ WINDOWS NT
- ☐ 51. ☐ X WINDOWS
- ☐ 52. ☐ SOLARIS
- ☐ 53. ☐ OTHER______________

☐ 54. ☐ None of the above (1-53)

8 For which areas outside of the U.S. do you have purchase influence? (check all that apply)

- 1. ☐ Europe
- 2. ☐ Asia
- 3. ☐ South America
- 4. ☐ Australia
- 5. ☐ Middle East
- 6. ☐ None

9 Which of the following hardware platforms are installed/planned in your company? (check all that apply)

	Mainframes		Minis			Mainframes		Minis	
	Installed	Planned	Installed	Planned		Installed	Planned	Installed	Planned
01. IBM	☐	☐	☐	☐	06. DATA GENERAL	☐	☐	☐	☐
02. DIGITAL	☐	☐	☐	☐	07. HP	☐	☐	☐	☐
03. AMDAHL	☐	☐	☐	☐	08. TANDEM	☐	☐	☐	☐
04. AT&T	☐	☐	☐	☐	09. UNISYS	☐	☐	☐	☐
05. BULL HNIS	☐	☐	☐	☐	10. OTHER________	☐	☐	☐	☐

Which of the following do you have installed/planned: (USE NUMBERS ONLY)

	At This Location		Entire Organization	
	Servers	Clients/Nodes	Servers	Clients/Nodes
11. POWER MACINTOSH				
12. MACINTOSH OTHER				
13. POWER PC BASED				
14. PENTIUM BASED				
15. 80486 BASED				
16. 80386 BASED				
17. 80286 BASED				
18. 80806/80808 BASED				
19. ALPHA BASED				
20. RISC/UNIX BASED WORKSTATIONS				
21. OTHER				

10 What is the estimated value of networking equipment and services that you help specify, recommend or approve annually? (check one only)

- 01. ☐ $100 million and over
- 02. ☐ $50 - $99.9 million
- 03. ☐ $25 - $49.9 million
- 04. ☐ $20 - $24.9 million
- 05. ☐ $10 - $19.9 million
- 06. ☐ $5 - $9.9 million
- 07. ☐ $1 - $4.9 million
- 08. ☐ $500,000 - $999,999
- 09. ☐ $499,999 or less
- 10. ☐ None of the above

11 Estimated gross annual revenues of your entire company/institution: (check one only)

- 1. ☐ Over $10 billion
- 2. ☐ $1 to $9.9 billion
- 3. ☐ $500 to $99.9 million
- 4 ☐ $100 to $499.9 million
- 5. ☐ $50 to $99.9 million
- 6. ☐ $10 to $49.9 million
- 7. ☐ $5 to $9.9 million
- 8. ☐ $4.9 million or less
- 9. ☐ None of the above

12 Estimated number of employees: At This Location/In Entire Organization.

At This Location:
- 1. ☐ Over 10,000
- 2. ☐ 5,000 - 9,999
- 3. ☐ 2,500 - 4,999
- 4 ☐ 1,000 - 2,499
- 5. ☐ 500 - 999
- 6. ☐ 499 or less

Entire Organization:
- 1. ☐ Over 10,000
- 2. ☐ 5,000 - 9,999
- 3. ☐ 2,500 - 4,999
- 4 ☐ 1,000 - 2,499
- 5. ☐ 500 - 999
- 6. ☐ 499 or less

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GLOBAL SERVICES

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FAST-PACKET NETS

BellSouth offers frame relay, SMDS links to IXCs

BY TIM GREENE

Nashville

BellSouth Telecommunications, Inc. last week announced that it can connect its frame relay and SMDS nets to those of interexchange carriers (IXC).

At the CompTel 1995 trade show here, BellSouth launched two new services targeted at IXCs — Exchange Access Frame Relay and Exchange Access Connectionless Data. Once one or more IXCs employ the offerings, BellSouth users will be able to gain the benefits of frame relay and Switched Multimegabit Data Service end-to-end across local access and transport area boundaries.

Several IXCs have shown interest, and at least one will announce an agreement with BellSouth within two weeks, according to the company.

Bob Williamson, BellSouth's manager for interconnect marketing would not say which IXC had a pending deal but did note that MCI Communications Corp., the only IXC to support SMDS, has expressed interest in the Exchange Access Connectionless Data SMDS offering.

That service supports interconnection of local and long-distance SMDS networks at speeds of 56K, 64K and 1.5M bit/sec. It will support up to T-3 speeds later this year when the intercarrier interface is finalized.

Exchange Access Frame Relay, on

See BellSouth, *page 25*

New BellSouth offerings

- **Exchange Access Frame Relay**
  Lets IXCs buy access to BellSouth frame relay services at speeds from 56K bit/sec to T-3, allowing end users interconnection between local and long-distance frame relay nets.
- **Exchange Access Connectionless Data**
  Lets IXCs offer interexchange SMDS service to connect major metropolitan areas in the BellSouth service region.

BRIEFS

Four Asian carriers are forming a joint venture company to provide **one-stop shopping** to users seeking networks services in the region. **Singapore Telecom, Telecom Malaysia, Philippines Long Distance Telephone Co.** and **PT Indosat of Indonesia** intend to provide one-stop shopping initially for very small aperture terminal, private leased-line and facilities management services, Singapore Telecom said. The group is also recruiting carriers in Thailand and Brunei.

Singapore Telecom USA: (203) 454-6800.

A $2,500-and-up **mobile financial workstation** has been assembled by partners Compaq Computer Corp., RAM Mobile Data, Telescan, Inc., AT&T and Wireless Telecom, Inc. (WTI). WTI integrated the package, which is built around the Compaq Contura Aero notebook personal computer with wireless access to AT&T Mail and Telescan's on-line news and stock service, to allow stockbrokers, investment analysts and others to track sudden market changes and hop on investment opportunities.

WTI: (303) 338-4200.

AT&T said it is making **Synchronous Digital Hierarchy (SDH)** technology available to telecommunications authorities around the world that link their countries to others through a North American carrier, rather than running their own direct intercountry connections. SDH, an international standard similar to Synchronous Optical Network (SONET), should **streamline end-to-end management** for the carriers and increase the reliability of their networks, AT&T said.

Two former **AT&T labor relations executives** pled guilty to criminal conspiracy charges in what the Securities & Exchange Commission called an "insider trading ring." Retired Labor Relations Vice President Charles Brumfield and former District Manager Thomas Alger were said to **exploit inside information** prior to AT&T's acquisitions of Paradyne Corp., NCR Corp. and other firms. AT&T was not charged with any wrongdoing.

Portable application keeps rental car company in check

BY JOANIE WEXLER

Lisle, Ill.

Budget Rent a Car Corp. has gotten behind the wheel of a mobile insurance claims estimating system that is expected to drive operational costs down by a factor of four.

The car rental company is self-insured, meaning it administers and pays its own auto insurance claims. Toward that end, it has a staff of 50 adjusters who evaluate damage to Budget vehicles before shipping them for repair.

After five months of testing, Budget, based here, replaced the adjusters' pen-and-paper method of doing business late last month with an automated, portable system from ADP Claims Solutions Group in San Ramon, Calif.

Dubbed Audapoint, the DOS- or Windows-based system comprises laptop computers running vehicle claims software that shows the detailed anatomy of every vehicle on the road in the U.S. It tells adjusters what internal repairs are likely needed based on damage visible from the outside and calculates the corresponding costs.

The Audapoint laptop also houses, on CD-ROM, an ADP database with data on labor repair fees and vehicle part numbers, and prices and availability. That eliminates the need for adjusters to run back and forth to the office to consult huge volumes of printed information and make phone calls to parts stores.

The car rental company anticipates gaining a dollar in operational savings for every 25 cents it spends on the setup, according to Michael Kroll, Budget's director of fleet development and vehicle maintenance. Fifty percent of the savings will come from allowing adjusters to turn around more accurate claims faster. The speed of filing claims has a direct relationship to how much Budget recoups from accidents that weren't a Budget vehicle operator's fault, Kroll explained.

The other half of the expected savings will come from expense control. For example, a customized Audapoint component should save Budget half a million dollars a year by making sure adjusters order the most economical vehicle replacement parts.

ADP added to its database Budget's list of parts made by Ford Motor Co. These are priced less expensively for the after-market and sold through Ford's Motorcraft Co. division. Audapoint flags unnecessary orders for higher priced Ford parts and replaces them with the Motorcraft order numbers that correspond to the same parts.

In addition, the system blocks users from ordering an incorrect part. Once the adjuster has typed "right front fender" into the estimate, for example, the system rejects a part number that correlates to, say, a left front fender.

Laptop-toting adjusters now write estimates for multiple vehicles in one trip to a Budget site and transmit them over phone lines to Autonet, ADP's 250-city, X.25-based network. Adjusters upload their estimates into the ADP-maintained database, and management reports are generated for Budget by ADP.

While Audapoint and its successor, PenPro, which uses a stylus as an input device, have been developed to support several wireless network links, analog cellular is the only one available, said Frank Patchel, senior vice president of estimating at ADP.

The reason is that other nets — such as those from ARDIS Co., RAM Mobile Data and any number of Cellular Digital Packet Data net operators — do not stretch far enough that users can count on the links to work wherever they are, he said.

Mobile Oracle tool too pricey?

For managing communications between a Unix database server and portable client computers, ADP Claims Solutions Group gave Oracle Corp.'s new mobile client/server tools a test-drive.

Oracle in Motion helps developers build applications optimized for narrow and costly wide-area links. After testing it for 30 days, ADP described the product as "solid." But it found the cost per user prohibitive — between $300 and $400, even with volume discounts — and decided not to buy it.

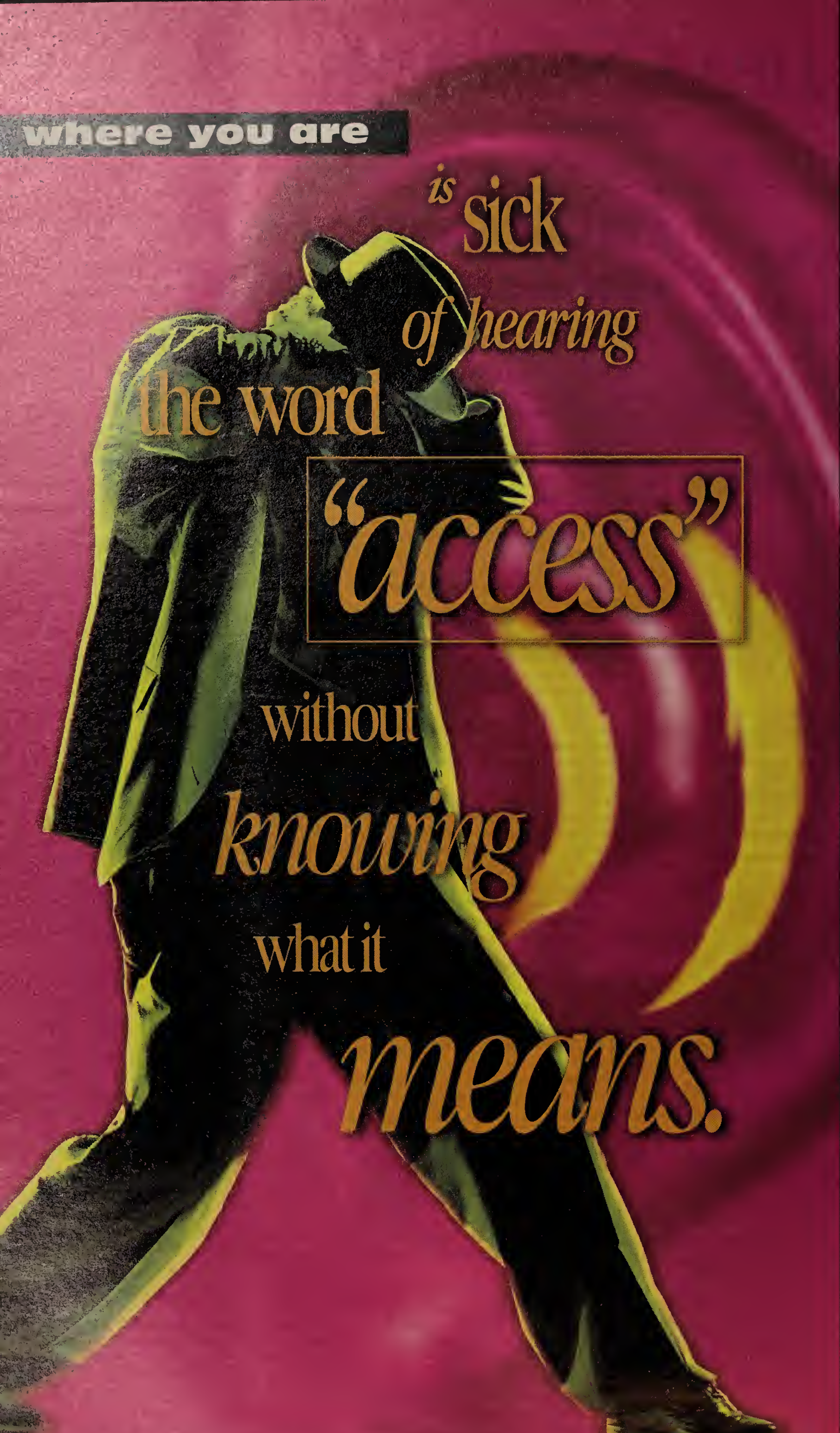
The company checked out Oracle in Motion because it wants to shift its vehicle claims automation system from an IBM MVS-based hierarchical database to a relational database running on a Sun Microsystems, Inc. SPARCstation. Oracle in Motion includes a server-based messaging gateway that shuttles requests for data to the database, then sends just that chunk to the client.

In laboratory testing over X.25 and RAM Mobile Data wireless links — the only wireless interfaces supported by Oracle in Motion so far — ADP found the tools "valid for low-speed, message-based communications over the wide area," said Bob Wargowski, ADP's director of system architecture.

Scott Weston, ADP's lead programmer/analyst, said the product was "quite reliable and easy to set up, although it didn't deliver especially high throughput."

Oracle's advice was to more closely match the data packet size in ADP's application to the Oracle-dictated datagram size for reducing wasted packet space. "But developers don't want to worry about those low-level pieces," Weston said. "We don't want to be restricted in the way we write the application."

BY JOANIE WEXLER



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Circle Reader Service #27

FCC wants the right to auction phone numbers

BY DAVID ROHDE

Washington, D.C.

The historic notion that telephone numbers are a free public resource may be crushed under the weight of huge demand.

Citing increased interest in phone numbers with commercial value, the Federal Communications Commission has asked Congress for permission to auction off some numbers. If the commission gets its way, 800 numbers, three-digit information service numbers ending in 11, follow-me numbers for personal communications services (PCS) and other such numbers could go on the block.

The FCC included the auction request in a wish list for telecommunications legislation. The proposal's wording seemed to indicate that carriers, not users, would pay for the numbers up for auction. But it drew immediate concern that it could reduce users' choice of carriers.

For example, Jay Kitchen, president of the Personal Communications Industry Association (PCIA), wrote a letter to FCC Chairman Reed Hundt stating that the auction proposal would mainly affect smaller PCS providers, while protecting larger carriers that already have valuable telephone numbers in inventory.

For example, AT&T has reserved 22 blocks of 10,000 PCS numbers in the 500 area code now being offered for PCS and follow-me services. These blocks include marketable letter combinations that can be used with AT&T's True Connections, a follow-me service that uses 500 numbers (see graphic).

AT&T has been assigned the series of 500 numbers starting with the following combinations:

3463 (FIND)
367 (FOR)
44 (HI)

Since 500 numbers are not portable among carriers, only AT&T could assign numbers such as

(500) FIND-JOE,
(500) FOR-JOHN or
(500) HI-JANET.

AT&T was recently freed to aggressively market True Connections following FCC approval of local exchange carrier access tariffs for 500 service, despite the protests of MCI Communications Corp. and Sprint Corp. (*NW*, Feb. 13, page 46).

Both corporations and individuals are showing big interest in True Connections, according to an AT&T spokesman. "Our telemarketing center is filled up just about every hour," the spokesman said. "People often are not able to get through."

PCIA's Kitchen said the number-auction proposal may affect the course of bidding in the ongoing FCC broadband PCS auction. Kitchen told Hundt that a large investment banking firm already has called PCIA to ask whether spectrum bidders have included number auction costs in their bidding strategies or business plans.

"Clearly, Wall Street is watching this proposal closely and recognizes the huge, potential impact it may have on the wireless industry," Kitchen wrote in his letter to Hundt.

The number-auction proposal appeared to catch the 800-services community by surprise. While carriers are starting to prepare for the probable 1996 launch of a new toll-free 888 area code, the FCC proposal focuses concern on the continuing strong demand for the existing, publicly recognized 800 numbers.

For example, Southern New England Telephone Co., the non-Bell local exchange carrier for Connecticut, recently asked the FCC to force other carriers to give up a series of numbers beginning with 800-555.

Bigger carriers snapped up virtually all of these numbers when they became available late 1994, shutting out smaller carriers, Southern New England Telephone alleges in a petition that it filed at the commission.

BellSouth

Continued from page 23

the other hand, supports Network-to-Network Interfaces (NNI) at speeds of 56K, 64K, 1.5M and 45M bit/sec. That is faster than the top speed for similar services offered by any other local exchange carrier (LEC), according to Eric Paulak, associate publisher at the Center for Communications Management Information, a provider of rate and tariff information in Rockville, Md.

Ameritech Corp., NYNEX Corp., US WEST, Inc., Bell Atlantic Corp. and Pacific Bell now offer similar NNIs, Paulak said, and SBC Communications, Inc. has said it will offer interconnection this year.

Paulak noted that users with networks extending beyond the reach of BellSouth will have to lease private lines to the branches served by other LECs if they want to use T-3 speed end-to-end.

Users with networks extending beyond the reach of BellSouth will have to lease private lines to the branches served by other LECs.

BellSouth's tariffed NNI fees are the same for both services, ranging from $62 per month for 56K bit/sec to $2,426 per month for the 45M bit/sec frame relay service. With a two-year commitment, the fee range drops to $44 for 56K bit/sec to $1,715 for 45M bit/sec. Onetime charges for setting up the service range from $300 to $1,050.

The services can be ordered at any committed information rate (CIR) in increments of 16K bit/sec, and they allow oversubscription to handle bursts above the CIR. There are also mileage charges to the IXC point of presence.

BellSouth is still prevented from providing end-to-end service beyond the local loop, but it can refer users to IXCs, which Williamson said can arrange end-to-end service.

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*Circle Reader Service #***32**

CLIENT/SERVER APPLICATIONS

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BRIEFS

Hewlett-Packard Co. last week announced enhancements to its Intelligent Warehouse **data warehouse** software. The company rolled out a low-end version designed to support about 30 end users. Also new is a tool dubbed Intelligent Warehouse Guide that lets users of HP's high-end warehouse software browse contents and launch reports. Pricing for the low-end version of Intelligent Warehouse starts at $75,000. The new tool for the high-end warehouse costs $695 per client and $10,000 per server.

Software AG of North America, Inc. of Reston, Va., announced that it will resell **MicroStrategy, Inc.'s DSS Agent** as part of its Open Data Warehouse Initiative. Software AG will bundle DSS Agent with Esperant, the end-user component of its **data warehouse** offering. DSS Agent lets end users develop decision-support applications for complex analysis of data stored in most major relational databases. Pricing for single-user licenses begins at $595 for Esperant and $795 for DSS Agent. A bundle of both is available for $1,295.

Software AG: (703) 860-5050.

Business Objects, Inc. this week will announce BusinessQuery for Excel, an add-on for Microsoft Corp. Excel that lets users query **databases** using business terms instead of SQL. It will be sold as an add-on to the company's BusinessObjects query tool for $99 per user sometime before April. A stand-alone version of BusinessQuery will ship in the second quarter for $350 per user.

Business Objects: (408) 973-9300.

Gupta intros more powerful SQLBase edition

Release will have better management features and access to other databases.

BY BARB COLE

Menlo Park, Calif.

Gupta Corp. this week announced SQLBase 6.0, a new version of its relational database that includes improved administration tools and high-end features.

Among the new capabilities in Version 6.0 — which can run on Novell, Inc. NetWare, IBM OS/2 and Microsoft Corp. Windows and Windows NT systems — is support for stored procedures and triggers. Users can now write SQLBase stored procedures using Gupta's SQLWindows Application Language, and cut and paste existing SQLWindows application code into SQLBase.

Dave Nelson, a senior analyst at Price Waterhouse in Chicago and a beta tester of SQLBase 6.0, said the addition of stored procedures will mean that when users update a certain table, related tables can automatically be updated.

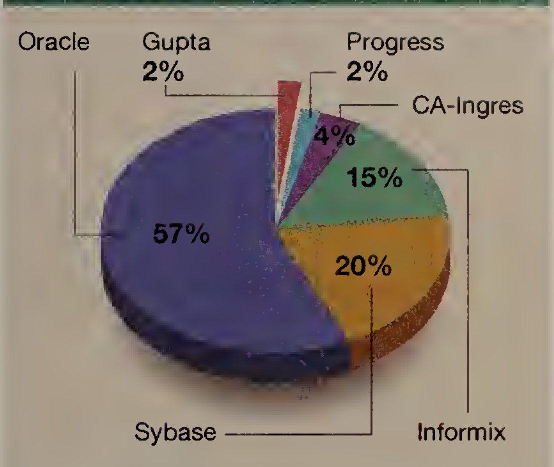
SQLBase has also gone upscale in that it can now handle 10G to 15G bytes of data, compared with about 4G bytes before. It can also load data about 10 times faster than before as a result of a new sort algorithm.

Gupta complemented its SQLBase 6.0 introduction by announcing SQLBase Ranger, an add-on that will pull data out of databases from Oracle Corp., Sybase, Inc., Microsoft, Informix Software, Inc. and IBM.

Down the road, the firm will expand SQLBase Ranger's capabilities to include data replication, said Craig Donato, product marketing manager at Gupta.

SQLBase Ranger, which will cost $395 per user, will support "client-centric" replication, in which client computers initiate replication sessions with servers, Donato said.

A little piece of the pie



Gupta had a small share of the client/server database market for the first six months of 1994 (latest available figures), based on total revenue of $298.8 million.

SOURCE: MONTGOMERY SECURITIES, SAN FRANCISCO
GRAPHIC BY SUSAN SLATER

MORE MANAGEABLE

As SQLBase lets users design more sophisticated applications, it will also become more manageable. Version 6.0 will include an improved edition of SQLConsole, a Windows-based administration tool for such tasks as adding users and changing database tables, Donato said.

Revamped for SQLConsole is a Scheduling Manager that lets administrators automate routine tasks such as downloading data from other databases. An improved Alarm Manager ensures that the tasks are completed and, if a problem arises, automatically pages or sends electronic mail to an administrator informing him of the trouble, Donato said.

SQLBase 6.0 databases may also be managed via other vendors' Simple Network Management Protocol systems, making it the first database to support SNMP, according to Donato.

Pricing for SQLBase 6.0 Server for NetWare ranges from $995 for five users to $9,995 for an unlimited number of users. The SQLBase 6.0 Desktop — which includes Gupta's Quest reporting tool, a multiuser version of SQLBase server and a single-user version of SQLBase for Windows — costs $295 for a one-pack, $995 for a five-pack and $3,995 for a 25-pack. SQLBase 6.0 will ship in the first quarter with SQLBase Ranger coming in the second quarter.

©Gupta: (415) 321-9500.

IBM antes up with new tools to give DB2 users Web access

BY BARB COLE

Somers, NY

When users think of database check-off features, stored procedures, replication and parallel processing come quickly to mind. But providing a way to link databases to the World-Wide Web is quickly moving to the forefront.

Recognizing that, IBM has joined a growing list of database companies prepping tools to help customers make their data accessible from the Web.

IBM's DB2 World-Wide Web (DB2 WWW) will let application developers point the way to DB2 data from Web home pages.

In addition, it may be used as a front end to DB2 databases to perform updates and retrievals.

IBM database rival Oracle Corp. last month announced the World-Wide Web Interface Kit, a series of sample applications to help Oracle users enhance their Web servers with search, retrieval and transactional capabilities. That kit could be used to build a Web-based electronic storefront that delivers orders into an existing order-entry system, for example.

Sybase, Inc. is also eyeing how it can help database customers exploit the Internet, according to Russell Werner, director of Sybase's New Media division. Werner said interface kits, similar to those being touted by Oracle and IBM, are available from third-party software vendors, but Sybase has not ruled out offering its own.

"We're looking at issues like how to manage 100,000 simultaneous transactions and track electronic payments," he said.

Analysts applauded the firms' efforts and said they are key to helping companies exploit Internet-based commerce.

"It's essential that they do this. Even though the Internet is not ready for widespread transactional use, companies are looking to provide Web interfaces to their less sensitive information," said Glenn Gabriel Ben-Yosef, president of Clear Thinking Research, a Boston-based market research and consulting firm.

General availability for DB2 WWW for DB2 databases running on AIX and OS/2 will be announced later this year. Future releases of DB2 WWW will support DB2 database on MVS, OS/400 and VM, as well as non-IBM databases. Pricing was not announced.

©IBM: (914) 765-1900.

Spinning a Web strategy

Company	Plan
IBM	DB2 WWW will let users populate Web pages with DB2 data and perform database updates and retrievals from IBM WebExplorer or Mosaic.
Oracle	Is giving away World-Wide Web Interface Kit, sample applications to help Oracle users enhance Web servers with search and retrieval capabilities.
Sybase	No Web interface for its System 10 database has been announced. The company is exploring how it can help customers address Internet-related issues, such as handling on-line payments.

Web bug causes 'Net jam

World-Wide Web administrators have uncovered a bug that has been slowing down their machines and jamming the Internet with useless IP packets.

Web servers running different Unix flavors and the National Center for Supercomputing Applications' httpd server software failed to reset after Windows clients disconnected from Serial Line Internet Protocol (SLIP) or Point-to-Point Protocol dial-up links.

Because httpd software is designed to poll clients every 56 seconds, some servers began to grind to a crawl as they continued to pump out more of these 1,396-byte "Are you there?" messages. Given this, Silicon Graphics, Inc. has issued a patch for its Irix variant of Unix, while Sun Microsystems, Inc. is working on a similar patch for its Unix software.

Ed Goldgehn, senior vice president at router vendor Livingston Enterprises, Inc., whose users discovered the problem two weeks ago, said some servers had as many as 100 of these processes occurring simultaneously. Extrapolating that across an estimated 2,500 Web servers running httpd resulted in as much as 6% of all Internet traffic consisting of these packets. Goldgehn said the bug stems mainly from two problems: the tendency of Windows-based SLIP clients to crash and the lack of a time-out sequence on the server.

BY ADAM GAFFIN

SHARED LOGIC

by Mike Rothman

Cupid's arrow lands in the Universal In-Box

Ah yes, another Valentine's Day gone by. The time of year when Cupid flies around shooting arrows indiscriminately, hoping to spawn a few love affairs for the rest of the long, cold winter.

It seems this year, old Cupid's arrow has landed squarely in the Universal In-box (UIB), the consolidation point for E-mail, voice mail, fax and probably a half-eaten turkey sandwich.

The trade press has recently warmed to the idea of the mythical UIB, precipitated by recent announcements by AT&T-Lotus and Novell. Now, it seems, the curiosity of users has been triggered, much like the way people rubberneck on the highway to see a gory accident.

Well, at the risk of spoiling your Valentine's Day cheer, we're likely to see the next millennium before we see the UIB. But isn't there a real user requirement for UIB functionality? Absolutely.

If you're a road warrior (join the club), it would be nice to have a single interface to retrieve all your communications after a tough day in a foreign city or land.

There has got to be a better way than checking your voice mail, dialing in to retrieve E-mail, dialing in to replicate your Notes databases and running down to the concierge to retrieve faxes.

So what's the interface for the UIB — voice mail? I don't think so. Although text-to-speech capabilities are acceptable for most text-based E-mail and faxes, I don't think AT&T or Octel has figured out a way to send a PowerPoint file for that big sales presentation over the voice line.

How about E-mail, my personal favorite. Sure, you can receive your presentation and even get faxes, but what about good old voice mail? It comes down to simple bandwidth. There ain't enough of it. Reliable speech-to-text functionality is still a long way off, and the idea of sending digitized voice over the data network is problematic.

Digitized voice files — even when compressed — are large. Most folks have neither the time nor the hard drive on their notebook to download 20 minutes of voice mail. Until we see something like ISDN to the hotel or some means of squeezing extra bandwidth out of an analog pipe, the road to UIBs will be a non-starter.

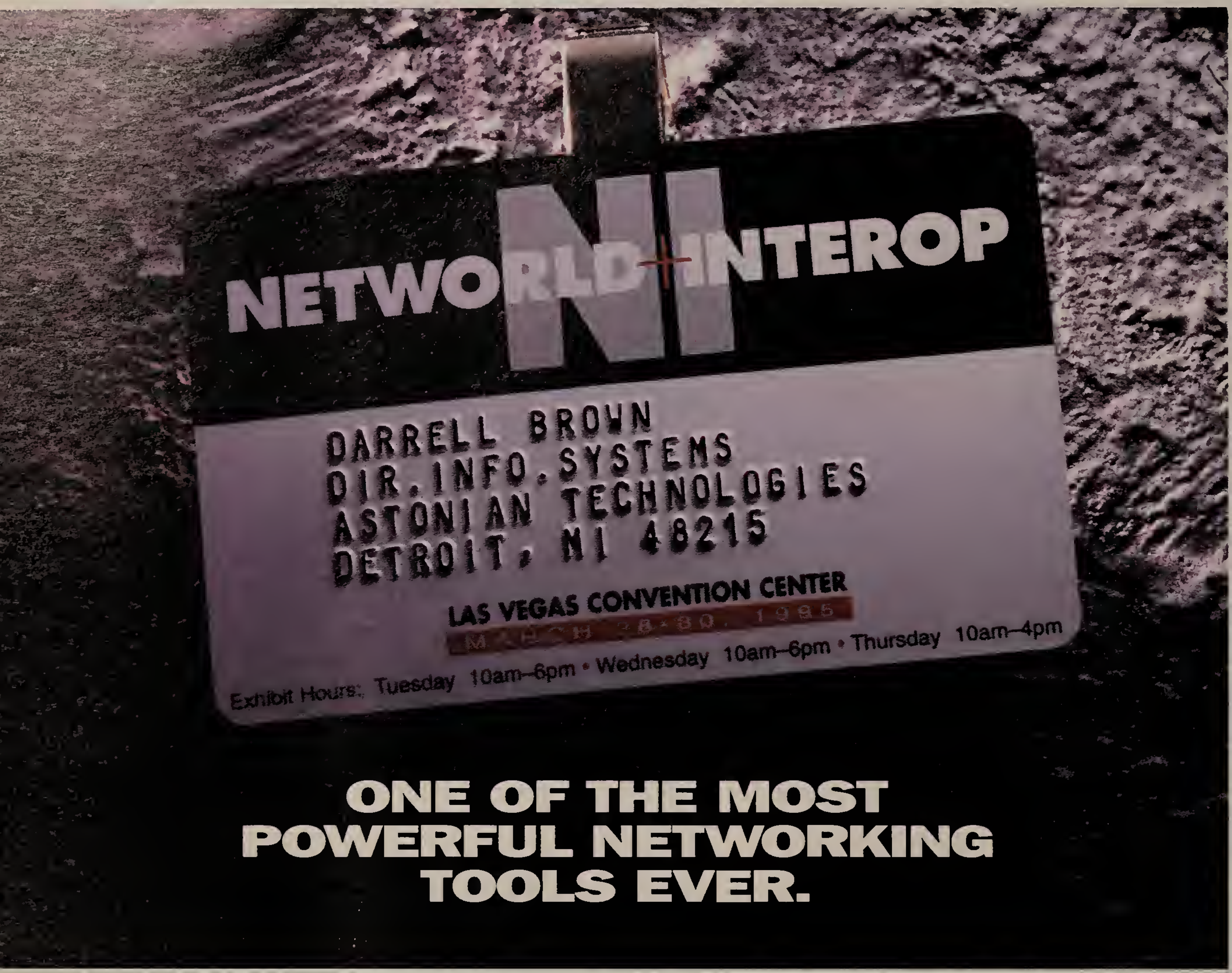
What about LAN-locked users working from their desks? Even for them, messaging integration will continue to be problematic. Suffice it to say if you start sending 1M- to 2M-byte files across the network with any regularity, you better have some budget for switched Ethernet and/or ATM; you'll need the extra bandwidth.

What do you tell users who want a UIB now? It would be nice to say, "You didn't eat your vegetables; you can't have a new toy," but that usually doesn't fly.

Are there niche applications suitable to the UIB? Sure, mostly revolving around the voice mail interface. When I go on META's European Hell Trip this June (six European/Middle Eastern cities in as many days), I won't be able to connect everyday (crummy phone lines, weird connectors), but it would be nice to get urgent text messages through my voice mail.

What do you tell users who want a UIB now? It would be nice to say, "You didn't eat your vegetables; you can't have a new toy," but that usually doesn't fly. I'd suggest explaining the technological snafus of implementing the UIB, how it may affect existing applications running on the network and force a need for more bandwidth. Then ask them to pay for an ATM network; that's sure to shut them up.

➡ Rothman is program director of META Group's Global Networking Strategies service in Reston, Va. Feedback is welcome either by E-mail at MikeR@metagroup.com or by phone at (800) 622-1108, Ext. 521. Rothman's column alternates in this space with that of Marc Myers, president of Client/Server Connection, Ltd.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EDITORIAL INSIGHTS

Republican-style reform

Our cover story this week focuses on the impact of the 104th Republican Congress on telecommunications legislation. In a nutshell, the Republicans appear destined to push for relaxing long-standing telecommunications regulations, supposedly paving the way for a new era of competition on a level playing field.

There are some provisos in the proposed bill, the Telecommunications Competition and Deregulation Act of 1995, that would seem to give an edge to carriers entrenched in key markets. One clause in the draft bill, sponsored by Sen. Larry Pressler (R-S.D.), calls for a three-year trigger that would launch the era of short-haul long-distance competition, lift the manufacturing prohibition on the regional Bells and remove the long-distance restrictions placed on them.

The regional Bells would likely squawk loudly about the three-year delay, and rightly so. It seems to make little sense to impose a moratorium on letting the regional Bells into long-distance markets. Sen. Robert Packwood (R-Ore.), favors a Le Mans start to competition, where all the carriers enter the race at the same time. That would seem to foster competition.

On another front, one of the first results of the Pressler bill, if enacted, would be the opening of the local loop and the abolishment of the age-old equipment bundling restrictions.

While it certainly seems that the bundling issue should be addressed, it may be wise to consider a delayed trigger to the restoration of equipment bundling practices. Permitting the practice at a time when new competitors are trying to establish themselves in local and long-distance markets could well snuff out any chance of true competition and dash any hopes of a level playing field.

One aspect of the Pressler effort that is appealing is his call for involvement from the White House. Pressler has called for Vice President Al Gore to join in a bipartisan effort to enact telecommunications reform this year.

In all likelihood, the vice president will become more vocal, probably just after the Democrats serve up their own telecommunications reform bill, which is said to be waiting in the wings. With the Republicans entrenched as committee chairs, it's unlikely the Democrats will be able to rally full support for their ideas. But they certainly stand to gain some concessions, and that is where the vice president may well be able to broker a deal.

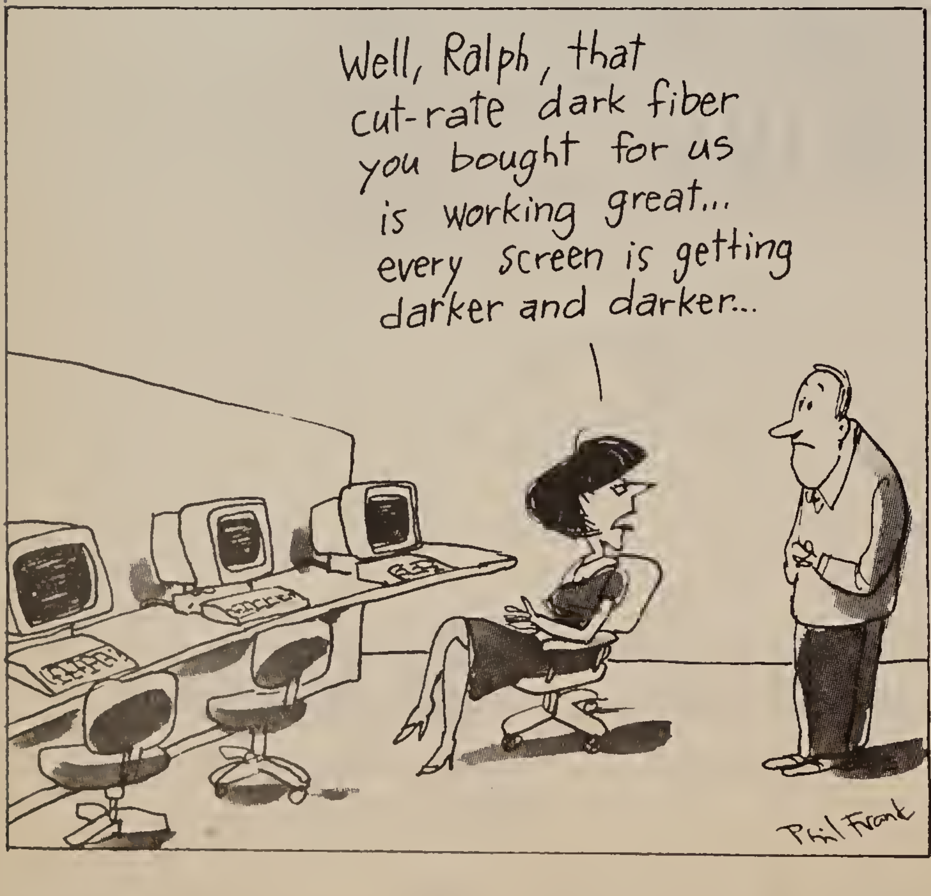
We'd like to know where the White House and Vice President Gore stand on the issue of telecommunications reform. I invite the vice president to respond directly to our community of 150,000 of the nation's leading network managers — the very people who are affected by the proposed legislation.

Likewise, I invite you to let me know what changes you want Congress to make with regards to telecommunications reform. We'll pass on your thoughts to key legislators.

CHARLES BRUNO cbruno@world.std.com

TELETOONS

FRANK AND TROISE


Well, Ralph, that cut-rate dark fiber you bought for us is working great... every screen is getting darker and darker...
Phil Frank

...ON SECURITY

by Winn Schwartau

Private key escrow has what it takes to nip Clipper

The adverse reaction to the White House's 1993 announcement of support for the Clipper Chip caused the Clinton administration to temper its support last July with a willingness to explore Clipper alternatives — when they became available. The wait is now over. Strong, privately developed, cryptographic key management solutions are hitting the market that provide viable and preferable alternatives to Clipper.

The concept of private, or commercial, key escrow has found powerful adherents throughout the government and private sector who see it as a viable alternative to the existing, untrusted Encryption Escrow Standard. Even better, some private key-escrow implementations not only serve government interests but also solve daunting security problems facing managers of huge enterprisewide networks. Some of these problems include:

- How a company can properly manage thousands of encryption keys without building an overbearing and costly infrastructure.
- How huge electronic mail systems with hierarchies of permission can be assigned and easily modified so only those with a need to know can have access to information.
- How a heterogeneous enterprise network can be adapted to a client/server encryption system without fundamental architectural changes to its topology.
- How a system like this can be deployed internationally without violating U.S. export control laws.

One big drawback to the Clipper/Capstone design is that it requires an expensive and extensive government-managed infrastructure to work properly. For Clipper/Capstone to gain popularity, the public must have complete confidence that its elected officials and civil servants will not abuse Clipper's (or a similar system's) trusted third-party escrow procedures. To date, that public confidence is close to zero

In contrast, private key escrow allows users to establish their own secure communications networks without government interference and still gives law enforcement agencies most of what they had hoped to gain with Clipper: the ability to lawfully read or listen to the contents of a digital or voice communication.

One such product, VEIL, from TECSEC, Inc. of Vienna, Va., combines the features of a workable private key-escrow system, selectable encryption algorithms, and effective enterprisewide key management and distribution functions. Here's how it works.

Let's say you want to set up private communications between everyone in your neighborhood. You, as the systems administrator, would physically or electronically distribute key disks that contain coded files describing what information individual users may or may not have access to. The coded key disk is broken into four broad categories, which you might call Location, Hair Color, Eye Color and Age. Within each category, any number of additional subcategories may be created, allowing you to further refine who may and may not read certain files.

So if you want to send a private encrypted message to "All blond-haired, blue-eyed people over the age of 30 who live in odd-numbered houses," you merely choose those characteristics from the list supplied on the key disk. The message is automatically encrypted and sent on its way. Your neighbors, whose key disks indicate they match the specified characteristics, can painlessly read the message while everyone else sees an undecipherable string of text.

In the corporate and government world, the advantages to this approach are obvious. The systems administrator can quickly establish who may speak to whom securely and implement a policy-driven, confidential cryptographic messaging system. Using key-disk labels such as Location, Department, Function and Sensitivity (or whatever), and sublabels such as New York, Accounting, Manager, Confidential and the like, a company's cryptographic hierarchy is put into a matrix strictly controlling the access to, and release of, information.

The implementation of software-based, private key-escrow key management does not require a company to rebuild or reengineer its existing infrastructure or networks. Each user receives the appropriate software for their type of workstation and a key disk that establishes their particular rights, and off they go. Network topology, protocols and connectivity are nonissues since private key escrow works at Layer 7, the applications layer. And, you, the user, can choose from as many as 10 different hardware or software algorithms to protect the privacy of your traffic. What could be easier?

It seems as though VEIL and similar products coming down the pike solve everything but the government's stated need and desire to listen to and decrypt telephone (and in the future, electronic) messages. These are real concerns in criminal cases. However, civil libertarians and cybercitizens, in general, decry the potential for indiscriminate abuse by either legitimate or renegade law enforcement officials. So where's the balance?

With software-based private key escrow, the government can do a lot to protect its interests. It can legislate that decryption keys be privately escrowed in a vault and, upon proper court authorization, ceded to law enforcement officials. Failure to comply with a court order is a crime in itself. For individuals under investigation, a similar court order would mandate the release of encryption keys; any resistance would be viewed as contempt of court. In effect, the government would become its own key-disk repository for its users, just as a corporation becomes its own.

The Clinton administration and assorted agencies in Washington, D.C. have hung their hats on Clipper as a means of protecting national security interests. But with rational alternatives up and flying, the government should now find itself in a very attractive situation: It can hop off the ill-fated, overly bureaucratic, technically questionable Clipper train and realize that private key-escrow systems will give it the best of both worlds — a means to access the very information it wants without having to build a costly, politically incorrect infrastructure to do it.

Schwartau, executive director of Inter.Pact, Inc., is one of the country's leading consultants on information security and electronic privacy. He is the author of *Information Warfare: Chaos on the Electronic Frontier* and *Terminal Compromise* and is editor of "Security Insider Report," a monthly newsletter. He can be reached at (813) 393-6600 or via the Internet at p00506@psilink.com.

WIRELESS COMMUNICATIONS

by Alan Pearce

Competition today, consolidation tomorrow

There are increasing signs – some might dub it a trend – that the wireless communications market is suffering from too much competition, even though it is still in its nascent stages. Consider the following:

First, in a little more than 11 years, cellular telecommunications has grown from zero to more than 20 million subscribers. There are more than 15 million pagers in use, up from 75,000 in 1970. And special mobilized radio (SMR), which was first licensed by the Federal Communications Commission in 1977, currently has 2.5 million customers.

Second, MCI Communications Corp., clearly one of the dominant forces in the telecommunications-information industry, has thus far shunned the so-called wireless revolution. MCI sold its early cellular licenses and, more recently, backed out of a deal to plunk down more than $1 billion for a 17% stake in Nextel Communications, Inc., the nation's leading enhanced SMR (ESMR) provider. MCI is also assiduously avoiding the current frenzied auctioning of broadband personal communications services (PCS) licenses by the FCC.

Most recently, the Washington Post Co. always a smart player in the telecommunications industry, has decided to sell almost all of its 70% financial stake in the start-up PCS company, American Personal Communications, Inc. (APC) – one of four companies to receive a Pioneers' Preference Award from the FCC. The Post will sell its APC interest for $33 million to the wireless joint venture group of Sprint Corp., Tele-Communications, Inc., Cox Cable Communications, Inc. and Comcast Corp.

Perhaps the anxiety about the future of wireless communications concerns the fact that by the end of this decade there will be many more suppliers of local, national and international wireless services than there will be providers of local and national wired services.

Today, wireless users have a choice of two cellular, several paging, and a variety of SMR and ESMR providers. In the next one to two years, several PCS operators will arrive on the scene.

Shortly thereafter, the FCC expects a number of low-earth orbit satellites to kick in. This means that users will be faced with plenty of choices at attractive and possibly highly competitive prices. Unfortunately, that might not be a good business prospect for the investors, as the Post, among others, has just discovered.

Nonetheless, the wireless industry will continue to attract the business interest of the major telecommunications-information and entertainment industry giants. Just look at the companies involved in the current FCC auction for the broadband PCS licenses.

The bidders include:

- Pacific Telesis Group, which believes it must reenter the wireless business now that it has divested itself of its cellular operator, AirTouch Communications.
- Bell Atlantic Corp., NYNEX Corp., US WEST, Inc., and AirTouch, which want to merge into a single nationwide cellular and/or wireless communications company.
- Ameritech Corp., SBC Communications, Inc. and BellSouth Corp., which are bidding separately on but are not ruling out future mergers or acquisitions.
- GTE Corp., which believes it must become a nationwide wireless carrier if it is to compete with the regional Bell operating companies and AT&T.
- AT&T, which is determined to strengthen its wireless dominance following its acquisition of McCaw Cellular Communications, Inc.
- Craig McCaw, who believes that business lightning can strike three times (he made his billions first from cable TV and then from cellular), now wants to dominate the PCS market with his new company, ALAACR Communications.
- Sprint and a whole host of CATV companies.

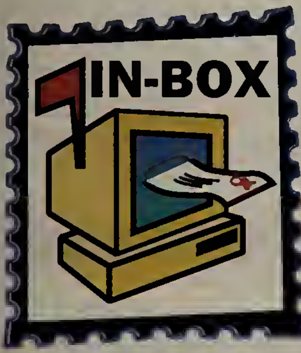
The U.S. government expects to gross a cool $10 billion to $12 billion from the PCS auctions. Then the "winners" must begin to build an infrastructure. Capital costs for the major trading areas will range from $30 million to $440 million. The PCS business is not for the faint of heart or empty of wallet.

There is, in fact, a growing consensus within the industry that current government policies will create too much competition in the wireless segment of the burgeoning telecommunications-information-entertainment industry.

While this undoubtedly will result in short- to medium-term price benefits for users, in the longer term you can expect to see significant consolidation via mergers, acquisitions and strategic partnering.

In the final analysis, only the few, large and deep-pocketed companies will survive. So users should enjoy the price and service competition while it lasts.

⊷ Pearce is president of Information Age Economics, Inc., a Washington, D.C.-based reseach and consulting company. He can be reached at (202) 466-2654.



Owner has rights

In his column about GIF (Jan. 16, page 16), Mark Gibbs totally tramples all over the principle of property rights, the backbone upon which much of the U.S. was built.

A frequent liberal attitude is that people should not be entitled to their property but should share it freely with all those less fortunate. If they do not share it, then the government should tax it or confiscate it and give it to the poor, like Robin Hood. Gibbs' column is so typical of liberal press attitudes.

Suppose you own a large farm and rented it to another person while you take a long-term sabbatical in Mongolia. When you return 7 years later, you find a third party has built a house and has been farming part of your land for a number of years. The renter of your farm did not tell you about the squatter. Upon your return, the squatter demands a deed to the property that his house sits on as well as the land he has been farming because you had not told him you were the owner. He just assumed that it was free land and by possessing it, he owned it.

If you were the owner of that property, would you deed it to the squatter without any payment? Regardless of how liberal some people may be with other people's possessions, I think most people would not give up their property so easily.

In the GIF situation, Unisys is not the bad guy; CompuServe, Inc. is. Unisys owns the farm. Whatever CompuServe's position is, was or might be, it is their obligation to make sure that when they use someone else's property, they have the appropriate clearances to use it. It is up to them to contact the owner, not vice versa. Unisys came home from vacation, found a squatter and basically demanded rent for use of its property, which is its right. Why is that such a problem? GIF is Unisys' property, and the company is entitled to earn "rent money" for its use.

Brad Gran
Vice president
Unix Integration Services, Inc.
Nashville

GIF me a break

Regarding "GIFgate – Nothing is sacred," Mark Gibbs' column:

Actually, I am not too worried about GIFgate. It reminds me of the Seaware-Philip Katz lawsuit over ARC files. Seaware sued Katz, claiming Katz had stolen their ARC code in creating his PKARC shareware. As a result, Katz came up with his own format, ZIP. The user community believed Seaware was a bully, and overnight millions of .ARC files were converted into .ZIP files. If Unisys Corp. pushes too hard, I expect to see GIF go the way of the dodo bird.

David Abrams
Engineer
Galactic Industries Corp.
Salem, N.H.

BONDING responds

Your article "IETF at work on bandwidth pooling spec" (Jan. 23, page 17) brought up several interesting points. As the chairman of the Bandwidth-On-Demand Interoperability Networking Group (BONDING) Consortium's Technical Committee, I would like to clarify some misperceptions in the article.

In regard to standardization, the channel aggregation algorithm developed by the BONDING Consortium has been submitted to the Telecommunications Industry Association (TIA) in the U.S. and the International Standards Organization for standardization. In ISO, it is currently a Draft International Standard (DIS 13871) scheduled for final ballot this spring or summer. It

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MCI Mail - 390-4868
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In-box

Continued from page 33

has already passed balloting in the TIA as a TIA/EIA standard (TIA/EIA-619). Therefore, the term ad hoc in the article is misleading. Multilink Point-to-Point Protocol will be an IETF standard, and the BONDING algorithm will be in an ISO and TIA standard.

Equipment built to the BONDING specification has been developed by many different vendors and has been deployed all over the world. The main application has been videoconferencing, but leased-line backup and LAN interconnection are also being supported.

The article mentions that Multilink PPP achieves faster setup time than BONDING, "which can take 5 to 15 seconds..." The vast majority of time it takes to set up a multichannel link is the call setup time over the switched network of the individual channels. This call setup time will be the same for Multilink PPP and BONDING. The time it takes to actually aggregate the channels will depend on the implementation, not the specification. After call setup is over (it can take as long as 5 seconds to set up six channels over the network for both BONDING and Multilink PPP), it can take as little as a half a second to aggregate a BONDING call.

The discussion about buffering implies a difference in principle where there is none. Both forms of channel aggregation fragment the data across the B channels and then reassemble the data at the receiving end. Both forms require buffering at the receiving end to equalize the delay between the channels. Therefore, there is no extra latency inherent in the BONDING algorithm over the Multilink PPP algorithm.

The diagram for the Multilink PPP vs. BONDING is also incorrect. The top figure illustrating Multilink PPP is the correct illustration for the BONDING algorithm, as well. The bottom figure is incorrect.

The BONDING algorithm is also capable of adding and subtracting channels on demand as is described for Multilink PPP.

The main difference between the two methods is the design intent and application. The BONDING algorithm was developed to support a synchronous, transparent bitstream that maintains bit (and byte) timing across multiple 56K or 64K bit/sec circuit-switched connections. Thus, it supports synchronous video or data transparently. Multilink PPP was specifically designed to support packet-based LAN traffic (routing or bridging) and to use generic High-Level Data Link Control hardware (already designed into most routers), instead of the special hardware usually required for BONDING implementations.

Multilink PPP will most likely be used over multiple high-speed modem connections or over multiple B channels. Products supporting Multilink PPP have yet to be widely available in the field, but I anticipate a widely varying quality of implementations as in every other technology.

Chip Sharp
Senior systems engineer
Teleos Communications, Inc.
Eatontown, N.J.

Editor's response: Thank you for clarifying some of the technical points. We maintain, however, that the article was accurate in its premise — Multilink PPP will do things that BONDING does not.

Both schemes are technically similar, as you say, and achieve fairly similar results. Still, this difference remains: Multilink PPP will best handle frame-based data traffic because it is designed to. It will be cheaper to implement and more widely deployed, if only as a software option following on the heels of PPP's popularity. BONDING will better handle videoconferencing and will remain an inverse-multiplexing solution.

Everyone's problem

In Joel Diamond's article (Jan. 30, page 19) about Windows for Workgroups (WFW), he mentions the compatibility problem between WFW Remote Access Services (RAS) and the Hayes Microcomputer Products, Inc. ESP cards. Yes, this is a problem.

However, one thing I believe was missing from Diamond's article is that the problem rests with Microsoft Corp., not with Hayes. In our efforts to develop client-side authentication software for the Windows environment, we have produced software that interfaces to the COMM.DRV driver as documented in Microsoft application program interfaces (API). Our software works fine in the Windows 3.1 environment — at least where other third-party communications vendors have not replaced COMM.DRV and the entire associated stack of drivers and protocols with non-Microsoft-compliant drivers. It seems about half of the communications software vendors have done this because of bugs in the Microsoft driver. Hayes provides a replacement driver for the ESP. card that complies with the documented Microsoft APIs.

The problem is that the WFW RAS client apparently uses undocumented function calls.

Until Microsoft fixes the RAS client by making it comply with their documented APIs, not only Hayes, but any other vendor that tries to supply enhancements to make Windows communications work well, will have these problems.

(The opinions expressed here are my own and do not reflect the policies or management opinions of my employer.)

Tommy Ward
Strategic applications manager
Digital Pathways, Inc.
Mountain View, Calif.

Help desk

Continued from page 2

projects. Currently, we use a lot of separate tools, like Microsoft Corp.'s Microsoft Project, that are not well integrated. A better system for capturing project data and recording events would save a lot of effort and enable managers to see problems sooner.

We have developed a master document that merges status reports for each project into a master status report, but we would like to improve our project management further.

Are there any products that can help us integrate our project management?

J. Burford Fields, Washington, D.C.

Linda Musthaler, a senior consultant with Currid & Co., a consultancy in Houston, says:

There are a couple of third-party solution providers that are doing some creative things with tying together applications featuring Microsoft Project.

Information Management Services provides a product called Distributed Project Management that enhances the workgroup functionality of Microsoft Project. For more information, call Jeff Nummelin at (802) 748-5013.

Software Made Easy offers Project Control, a product that keeps project schedules and their related documents in a document management system. For more information, contact Matt Meblin at (415) 381-9639.

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THE TROUBLE WITH HELP DESK SELECTION

Finding the tool that can prop end users up or cushion their fall is becoming more of a challenge.

By Linda Musthaler

The people helping others out of network computing jams are getting a sorely needed boost as more and stronger help desk tools hit the market. The only problem with this boon is that the selection process is becoming more troublesome because vendors of everything from network management systems to simple call-tracking software claim to sport help desk capabilities.

Many of the tools available today provide extensive features that let help desk consultants resolve common problems within minutes of receiving a call. The addition of strong problem-resolution features distinguishes today's products from yesterday's, which focused on logging trouble calls as they came in.

Help desk tools are also being fitted with application program interfaces (API) that enable them to tap the resources of other tools and further speed problem resolution or avert trouble in the first place. For instance, links to electronic mail systems allow help desk consultants to quickly notify more experienced staff of a complex problem. Links to network management tools feed alarms and alerts to the help desk consultant's workstation, which can then be used to broadcast a warning of impending doom to end users.

Other APIs providing links to fax servers and interactive voice response (IVR) units are evolving from a novelty to a requirement. Such interfaces make it easier to automate the entry of trouble reports and dispatch technicians.

These advancements are meeting the burgeoning demand for better tools from help desk staffs, which are being asked to deliver more with less, says Carter Lusher, vice president and research director at Gartner Group, Inc. consultancy in Stamford, Conn. In 1996, organizations will dole out an estimated $500 million in their search for better help desk tools, far more than the $160 million expected to be shelled out this year, Lusher says.

INSIDE

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Help desk tools can lead a double life by also servicing external customers.

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Knowledge bases make help desk consultants know-it-alls.

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Readers tell how help desk tools aid them.

Better tools will aid help desk staff in effectively dealing with a breadth of new technology spreading across the enterprise. Without such aid, the spread of technology would overwhelm the staff's ability to keep pace. There is also an organizational push to centralize help desk services, replacing the experts manning the local lines of support that have sprung up in small pockets throughout many companies with fewer people at a central site.

Against this backdrop, making a purchase will be anything but easy. There are more than 175 products claiming to have help desk capabilities today, and there is no clear market or technology leader.

One of the reasons for the high number of products is that help desk capabilities are being added to software packages originally designed for other purposes. For instance, network management software vendors such as Boole and Babbage, Inc., McAfee, IBM and others have built help desk functions into their offerings. Some document management products, such as Information Dimensions, Inc.'s Basis Plus, can be used to track trouble calls and the flow of problem solving information across the enterprise.

To compound matters, there are a lot of reseller

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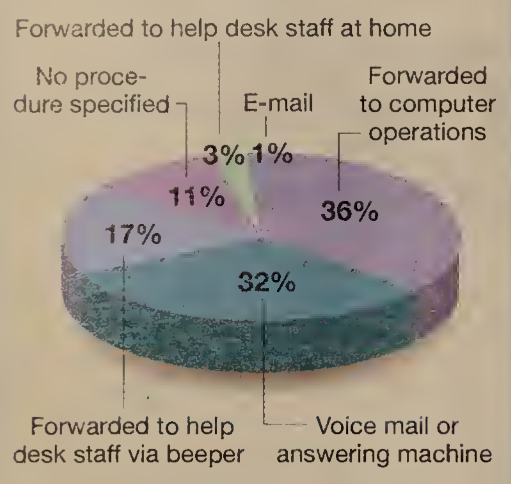
agreements in the market. Corporate Software, Inc. of Norwood, Mass., resells Hammersly Technology Partners, Inc.'s Utopia 2.1 product, for example. Ask vendors pitching help desk tools if the product's base technology was developed internally or licensed from a third party.

Non-staff support

How off-hour calls are handled or resolved.



Based on responses from 766 users.

SOURCE: HELP DESK INSTITUTE, COLORADO SPRINGS
GRAPHIC BY TERRI MITCHELL

Likewise, there is a growing crossover between help desk tools and products designed to meet the needs of customer service operations. For instance, some tools that are used to give consumers information on fixing durable goods are sprouting help desk roots and vice versa (see story, this page).

Still other products are low-end, personal computer-based call-tracking applications that offer little in the way of problem resolution.

The 22 companies listed in the Buyer's Guide chart on page 38 all provide high-end products suited for use by help desks that support enterprisewide networks. They all provide a means for frontline help desk consultants to take a user's call about a network or computer-related question or problem, log the call into a case-tracking system, and then attempt to diagnose and resolve the problem using some form of software-based reasoning and a knowledge database.

Such a comprehensive help desk tool is an expensive, long-term investment. It generally costs more to develop and maintain knowledge databases than it does to buy the help desk tool.

The vast majority of products run in client/server environments. The client component basically displays screens that prompt help desk consultants to prod callers for information or read scripts. Clients also are used to build database transactions that store caller information or retrieve problem solving hints. The server component generally consists of the application kernel; the databases for tracking cases, end-user profiles, assets and problem resolutions; and the communications components for workgroup and enterprise collaboration.

Some vendors, including Clarify, Inc., Hammersly Technology Partners and Remedy Corp., offer a three-tiered client/server approach, with separate servers for the application kernel, the case-tracking database and the problem-resolution database.

The industry trend for help desk software is toward an open architecture, with interfaces to various third-party database management systems such as the ones provided by Oracle Corp., Sybase, Inc. and Microsoft Corp. Interfaces to other third-party tools, such as report writers and document management systems, are also being added.

KNOWING THE WORKFLOW HELPS

Selecting the right help desk tool is easier if you understand how the typical call — if there is such a beast — is processed. This will enable you to make sure the tool has what it takes to handle the call correctly.

First, an end user — usually irate — calls to report a problem. Vital information such as the caller's name and nature of the problem is captured. Additional information about the caller, such as where the caller is located and what hardware and software the caller has, can be retrieved from end-user profile and inventory databases. All the collected data along with a free-form description of the problem is stored in a case database.

If the help desk consultant is omniscient, or just plain lucky, the caller's question can be answered or problem solved from memory or experience. Otherwise, it's time to activate case resolution aids. Using free-form text or key words or phrases, the consultant enters the symptoms or a description of the problem.

Let's say the caller cannot log on to a LAN. Depending on the problem-resolution technology used, the help desk tool can draw on some knowledge bases and offer basic questions the consultant can ask the caller. For instance, "Are you receiving any kind of error message?" Then the tool can suggest a series of actions the end user can try, such as rebooting the PC.

The frontline help desk consultant and end user can go back and forth trying different things to diagnose the problem's cause and find a workable solution. If the problem can't be solved, the help desk tool can use workflow or E-mail technology to send a synopsis of the call and actions taken to a more experienced consultant. Likewise, hooks to paging systems and telephones can be used to call in the heavy artillery — the technicians in the engineering department.

Once a resolution is finally found, the actions taken are logged in the case history database to become part of the knowledge base that is used the next time a similar problem crops up.

THE BASIC STUFF

Features that enable help desk consultants to log calls and enter information in case databases are pretty much standard among all the products. Among the basic features in this area are the ability to track multiple calls regarding the same case; automatic generation of a trouble ticket to dispatch a systems engineer; and integration with an automatic call distributor, which queues up callers when all help desk consultants are busy.

However, vendors are increasingly adding interfaces that make it possible for end users to report trouble by sending an E-mail message or employing a push-button phone or voice recognition to answer queries from an IVR unit.

Links to an SQL DBMS or a document management system are basic features that permit help desk consultants to capture and manage knowledge, enabling others to search for and retrieve information about prior problems, symptoms and resolutions. Capturing and retrieving this knowledge is crucial because it keeps you from recreating the wheel time and again.

Another feature becoming more common among products is a link to asset-tracking databases. This link enables help desk consultants to tap into the same databases used to track hardware and software configurations, network information, warranty and maintenance information, and other pertinent equipment data. The ability to automatically pull such information from these databases once the caller is identified reduces the number of questions the consultant has to ask the end user before attempting to solve a problem.

Reporting capabilities are another important consideration, and just about all the products come with a set of canned reports as well as the ability to generate ad hoc reports about trouble call processing. While reports are not the most glamorous feature of the system, they certainly are important. Typical help desk reports show trends, indicate recurring problem areas, provide case status and even help to justify the need for additional help desk resources.

Customization is also a key buying consideration. Low-end, off-the-shelf help desk tools rarely meet enterprise needs. There's always something you'll want to customize — user interfaces, data fields, reports, technology interfaces and so on. Ask your prospective vendor about the extent to which their product can be adapted to meet your specific needs.

CASING THE PROBLEM

Where the variety among tools starts showing is in the type of case resolution aids and hooks to other systems they support. All the products listed in the chart include at least some form of problem-resolution technology. Some deal well with structured information that can be used to assume that a certain symptom has a specific cause. Others deal better with unstructured information that can be used to list the many possible causes of a single symptom. Still others handle both structured and unstructured information, depending on the problem.

One type of problem-resolution technology incorporates an interface to full text retrieval systems, such as those from Fulcrum Technologies, Inc. and Verity, Inc. You can store extensive information in document form in these systems and search for problem resolutions

Continued on page 39

Help for the help desk

Help desk professionals can turn to the Help Desk Institute for training and education. Companies can obtain a sitewide membership for $425 or an individual membership for $225. For more information, call (800) 248-5667.

Help desk tools can also serve customers

Help desk tools are just as suited to support your organization's customers as they are internal users of network computing equipment.

Cast in the customer service role, help desk tools let operators or customer service representatives extract customer account records or a product manual's pages from a database instead of network configurations and equipment inventories.

Solving a customer's problem quickly and on the first call is extremely important. Therefore, help desk tools that place more emphasis on problem resolution than interfaces to systems such as electronic mail and network management are better suited for this double duty.

Integration with telephone systems, including automatic call distributors and fax-back systems, is also important for efficient customer service systems. For example, callers to Maytag Corp.'s repair line need to know where a washing machine drain hose hookup is and how the pipe gets attached before water starts gushing onto the floor. That type of information is something the customer service rep can readily access and read, or even fax to the caller.

Decision trees and other types of knowledge bases are well suited to the customer service arena, where the incoming problems and corresponding resolutions are likely to be very narrowly focused. Consider a utility company's support line. Customers are most likely calling about that company's services. Therefore, there is a limited number of problem/resolution combinations — unlike the internal help desk, whose problems may span a wide range of products.

In addition to problem-resolution techniques, customer service systems often have modules that support the marketing and sales of new products and services to existing customers. For example, a bank might have a service hot line for customers to call with problems or questions. While the customer is on the line waiting for the system to find an answer, the customer service representative can access a database to see that the customer only has a checking account and can then try to sell something else, such as a long-term certificate of deposit.

Contact management is another feature that helps a help desk tool cross over into the customer service arena. Contact management software is used to keep track of all communication with the customer. This software emphasizes the relationship with the customer, more than the nature of the customer's problem.

As you evaluate vendors and products, ask whether it is easy to parlay a help desk tool investment into a customer service operation. Software Artistry, Inc.'s Expert Advisor, The Molloy Group, Inc.'s Top of Mind Help Desk for Windows 3.3 and Answer Systems, Inc.'s Apriori GT can work in both environments.

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Help desk tools

Company	Product	Architecture	Client OS	Host or server OS	Transport protocols	Database support	Technology interfaces	Report generator	Key features															Pricing	
		C = Client/server F = File server-based	D = DOS M = Macintosh OS = OS/2 U = Unix W = Windows O = Other	D = DOS M = Macintosh N = NLM OS = OS/2 U = Unix W = Windows WN = Windows NT O = Other	I = IPX/SPX NI = NETBEUI NP = Named Pipes NS = NETBIOS T = TCP/IP V = VINES	P = Proprietary T = Third-party	A = Automatic call distributor E = E-mail EX = External knowledge base F = Fax server I = Interactive voice response P = Pagers	I = Included S = Separate T = Third-party	Direct or dial-up access for remote sites	Trouble-ticket generation	End-user profile database	Equipment warranty and maintenance database	Hardware and software inventory tracking	Stores historical data about problems and cases	Key word or phrase search engine	Integration with network mgmt. systems	Support for knowledge-based reasoning	Multimedia instructions for problem resolution	Case routing	Autocall escalation	Ability to alert secondary consultant	Support for chargeback	Customizable user interface	C = Per client S = Per server/Unlimited users SU = Per server/ No. of concurrent users	Maintenance fee (Percent of purchase cost)
AnswerSet Corp. (800) 883-4582	Clientele for Windows 1.02	C, F	W	N, WN	I, NI, NP, NS, T	T	E, P	S, T	✓	✓	✓	✓	✓	✓	✓				✓	(1)	(1)	4	4	C: NA S: NA SU: $6,195/10	15
Answer Systems, Inc. (800) 677-2679	Apriori GT	C	D, M, OS, U, W, O	U, O	T	P, T	A, E, EX, F, I, P	I, T	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	C: $4,500 S: $350,000 SU: $100,000/10	15
Astea International, Inc. (617) 275-5440	PowerHelp 2.0	C	OS, W	D, M, N, OS, U, W, WN, O	I, NI, NP, NS, T, V	T	E, EX, F, I, P	I, T	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	C: $2,500 S: $300,000 SU: NA	18
Aurum Software, Inc. (800) 683-8855	Aurum SupportTrak	C	U, W	U	N, T	T	E, EX, F, P	I, T	✓	✓	✓	✓	✓	✓	✓		(2)	(2)	✓	✓	✓	✓	✓	C: $3,000 S: NA SU: NA	18
BateTech Software, Inc. (800) 743-6238	Customer-One 2.0	C	W	WN	I, NI, NP, NS, T	T	E, F, P	S, T	(1)	✓	✓	(1)	(1)	✓	✓				✓	✓	(1)	✓	✓	C: $450 S: NA SU: $3,500/4	15
Clarify, Inc. (408) 428-2000	Clear Logistics	C	D, M, U, W, O	N, OS, W, WN	T	T	A, E, EX, F, I, P	I, T	✓	✓	✓	✓	✓	✓	✓	✓	(1)	✓	✓	✓	✓	✓	✓	C: NA S: NA SU: $1,000/1	15
	Clear Quality	C	D, M, U, W, O	N, OS, U, W, WN, O	T	T	A, E, EX, F, I, P	I, T	✓	✓	✓	✓	✓	✓	✓	✓	(1)	✓	✓	✓	✓	✓	✓	C: NA S: NA SU: $2,500/1	15
	Clear Support	C	D, M, OS, U, W, O	N, OS, U, W, WN	T	T	A, E, EX, F, I, P	I, T	✓	✓	✓	✓	✓	✓	✓	✓	(1)	✓	✓	✓	✓	✓	✓	C: NA S: NA SU: $3,000/1	15
	Clear Support Diagnosis Engine	C	D, M, U, W, O	N, OS, U, W, WN	T	T	A, E, EX, F, I, P	I, T	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	C: NA S: NA SU: $2,300/1	15
Hammersly Technology Partners, Inc. (800) 956-1301	Utopia 2.1	C	W	OS, W, WN	I, NI, NP, NS, T, V	T	E, EX, P	I, T	✓	✓	✓	(1)	(1)	✓	✓			(1)	✓	✓	✓	✓	✓	C: $1,095 S: $32,857 SU: NA	15
Inference Corp. (800) 322-9923	CBR2	C	OS, U, W	N, OS, U, W, WN, O	I, NP, NS, T, V	T	A, E, EX, I, P	I, T	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	C: NA S: NA SU: $30,000/10	20
Magic Solutions, Inc. (201) 587-1515	Support Magic for Windows 2.12	F	D, W	D, N, W, WN	I, NI, NP, NS, T, V	T	E, F, P	S, T		✓	✓	✓	✓	✓	(1)				✓	✓	✓	✓	✓	C: NA S: NA SU: $2,495/1; $9,995/8; $15,995/20	15
The Molloy Group, Inc. (201) 884-2040	Top of Mind Help Desk for Windows 3.3	C	D, W	D, N, OS, U, W, WN	I, NI, NP, NS, T, V	T	E, EX	S, T		✓	✓	✓	✓	✓	✓		(3)	✓	✓	✓	✓		✓	C: NA S: NA SU: $11,000/4; $15,000/8	15
Peregrine Systems, Inc. (800) 638-5231	PNMS Client/Server	C	M, OS, U, W	U, O	T	P, T	A, E, EX, F, I, P (4)	I	✓	✓	✓	✓	✓	✓	✓	(1)	(1)		✓	✓	✓	(1)	✓	C: NA S: NA SU: $42,500/5	20
Quintus Corp. (800) 337-8941	Customer Q 2.2	C	U, W	U, O	I, NI, NP, NS, T, V	T	A, E, EX, F, P	I, T	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓		✓	C: $4,000 S: $15,000 SU: $55,000/10	15
Remedy Corp. (415) 903-5200	Action Request System 2.0	C	D, M, U, W, O	U	T	T	E, EX, I, P	I, T	✓	✓	✓	✓	✓	✓	✓	✓	(2)		✓	✓	✓		✓	C: NA S: NA SU: $6,500/3	15
Software Artistry, Inc. (800) 795-1993	Expert Advisor 2.0	C	OS, W	N, OS, U, WN	I, NI, NP, NS, T, V	T	A, E, EX, F, I, P	I, T	(2)	✓	✓	(1)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	C: NA S: NA SU: $65,000/10	18
Software Clearing House, Inc. (513) 579-0455	Apriori LS 2.0	C	U, W, O	U	T	P, T	A, E, EX, F, I, P	I, T		✓	✓	✓	✓	✓	✓		✓	(2)	✓	✓	✓	✓	✓	C: $3,000 S: NA SU: $36,000-$50,000/5-10	15
Scopus Technology, Inc. (510) 597-5800	Scopus SupportTeam for the Help Desk	C	M, U, W	WN, O	I, NI, NP, NS, T, V	T	A, E, EX, F, I, P	I, S, T	(1)	✓	✓	(1)	✓	✓	✓	✓	✓	(2)	✓	✓	✓		✓	C: $3,000-$5,000 S: NA SU: NA	(5)
Sterling Software, Inc. (800) 247-5163	Solve: Central 3.1	C	W	O	I, T, V	P	E	I, T		✓	✓	✓	✓	✓	✓		✓	(2)		✓	✓	✓	✓	(6)	20
StonyBrook Software, Inc. (516) 567-6060	TroubleTrax 2.0	F	D, M, OS, W, O	O	I, NI, NS, T	T	A, E, F, P	I, T	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓		✓	C: $995 S: $6,495 SU: $3,995/5	(5)
Target Systems Corp. (800) 233-3493	Target Helpdesk 5.0	C	OS, W, O			T	E, EX, F, P	I, T	(2)	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	C: $1,000 S: NA SU: NA	20
Trellis Network Services, Inc. (800) 793-3390	Corporate HelpDesk 2.0	C	M, OS, U, W	N, OS, U, W, WN	I, NS, T, V	P	E, F	I, T	✓	✓	✓	(1)	(1)	✓	✓		(2)	(2)	(2)	✓	✓	(1)		C: NA S: $4,995 SU: NA	NA
The Vantive Corp. (800) 582-6848	Vantive HelpDesk 3.1	C	D, M, W	O	T	T	A, E, EX, F, P	S, T	(1)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	C: $2,500 S: $30,000 SU: $55,000/10	15
Vycor Corp. (800) 868-9267	DP Umbrella SQL 2.7	C	D, W, O	OS, U, WN	I, NI, NP, NS, T, V	T	A, E, EX, I	I, T	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	C: $7,995-$22,995 S: NA SU: NA	15

Products highlighted by color were selected for The Short List.

Chart compiled by Chen Paquet

FOOTNOTES:

(1) Provided at an additional cost.

(2) May be provided by a third-party vendor.

(3) Product is built around a neural network-based problem diagnosis and resolution that accomplishes the same thing.

(4) Available through an option called Axces.

(5) Vendor did not supply information.

(6) Pricing is based on MVS group size and user-based pricing for Windows.

NA = Not applicable

NLM = NetWare Loadable Module

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55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108

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109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126
127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162
163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198
199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216

MARKETPLACE

217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234
235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252
253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288
289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306
307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324

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Continued from page 36

based on the full text of a document.

The drawback to full text retrieval is that it can be time-consuming to peruse several text-laden documents while the caller is on the line. This method can be used more effectively by second line consultants assigned to the case or by callers themselves who can tap into the data from their own PCs. Clarify, Quintus Corp. and Hammersly Technology Partners support full text retrieval.

Key word searches are another technique. The consultant enters one or more key words, which are matched against the database of previously entered resolutions. This technique can be effective if the right key words are entered or if someone has carefully defined a full range of key words and their synonyms.

For instance, suppose the caller's problem involves a broken monitor. The consultant uses "monitor" as a key word. Previous resolutions might use the terms "CRT," "screen" or "display" rather than or as well as "monitor." If someone has indicated that all the words are synonyms for the same concept, the consultant is more likely to find the resolution on the first or second try. Otherwise, resolutions logged under the term "CRT" may never be made available. Most every vendor in the chart supports key word searches.

Reporting report

Ad hoc, on-line, printed and predefined reports are supported by 21 of the 22 vendors surveyed. The list would round out if Remedy had predefined reports.

One vendor, Answer Systems, Inc., has patented a technology called Bubble Up, which is sold in its Apriori GT as well as a lower end version called Apriori LS sold by third-party Software Clearing House, Inc. Bubble Up technology works on the premise that problems are bursty — the same one happens frequently for a while and then it doesn't happen anymore. Using the law of large numbers, this technology filters the most recently and frequently used case/resolution combinations to the top of the resolution database using an adaptive learning engine. For instance, a consultant can enter a complaint about an inability to log on to the network and up comes the 10 most likely reasons for why that problem is being encountered at that particular time.

What makes Bubble Up unique is that it senses the caller's profile before it suggests a solution. In the network logon problem, the answer might come from uncovering recently reported trouble within the caller's environment, such as a defective hub on that segment of the network or a temporary outage of a departmental server.

Decision trees prove effective when you have very structured information. A decision tree is basically a flow chart, a series of if, then or else software routines. Someone has to think about the logic involved in going through the steps to solve the problem and translate that logic into the knowledge base.

A decision tree is divided into the problem symptoms or causes and the most likely solutions. For instance, when a network printer paints black streaks on a page, the help desk consultant can enter the problem as, "Printer has black streaks." The solution that comes back could be, "clean the toner bar." Decision trees are only effective when a specific problem has a narrow set of causes. But it can be coupled with other, more advanced case-resolution technologies.

On the decision tree

Vendors claiming to provide problem-resolution aids based on a decision tree structure that utilizes if, then or else software routines include:

- BateTech
- Clarify
- Hammersly Technology Partners
- Peregrine
- Scopus
- Software Artistry
- Software Clearing House
- Sterling Software
- StonyBrook Software
- Target Systems
- Vycor

Case-based reasoning (CBR) is another popular problem-resolution aid. As the name implies, this technology looks at the history of previous cases. The consultant types in a description or symptom of a problem, and the tool goes through a database of resolved cases, looking for relevance to the current problem. The system displays questions to ask the caller and guides the problem diagnosis process. The answers to these questions update the case relevance, which, in turn, updates the list of questions again.

The premise with CBR is that sooner or later you will zero in on the exact cause and resolution for the problem. The drawback, as you can imagine, is that you need a significant case history database to make the process worthwhile. You can, however, purchase canned knowledge bases to get you up and running quickly (see story, page 40).

Little AppleTalk action

Only four of the 22 vendors surveyed provide products that run in an AppleTalk environment. They are Quintus, Scopus, StonyBrook and Trellis.

Answer Systems, Astea International, Inc., BateTech Software, Inc., Clarify, Inference Corp., Remedy, Software Artistry, Inc., Software Clearing House and Vycor Corp. support CBR.

More sophisticated problem-resolution techniques include neural nets, which use a defined pattern of words or phrases that are put through an algorithm to find matching patterns. This technique, supported by Software Artistry and The Molloy Group, Inc. also may be called finger printing because possible resolutions are ranked according to how well they match the finger prints of a problem description. The higher the ranking, the more likely the suggested resolution will fix the problem.

Many vendors — 16 of the 22 listed in the Buyer's Guide chart — provide multimedia instructions for resolving a problem. With multimedia support, the consultant or end user can access an audio or video clip that describes or shows how to resolve a problem. For instance, it could show how to change the toner cartridge in a printer or install an interface card in a PC.

LINKS OFF THE DESK

When problems can't be resolved by the frontline help desk consultant, they have to go to someone else. Most vendors include an interface to E-mail that can double as a means of receiving new cases and routing existing cases to other consultants. The most common mail products supported include Microsoft Mail, Novell, Inc.'s GroupWise and Message Handling Service (MHS), Lotus Development Corp.'s cc:Mail and Lotus Notes, as well as the Vendor Independent Messaging backed by Lotus and Microsoft's Messaging Application Programming Interface (MAPI).

Other popular interfaces include links to paging systems and fax servers. Pagers are used to alert secondary consultants or network analysts that a problem has been assigned to them. Fax servers are most often used to deliver information about how to resolve a question or problem to an end user.

It is also becoming more common for help desk tools to accept alerts and traps from network management systems, usually through an API. The help desk can then log the case and initiate some action to resolve the problem. This eliminates the need for a network administrator to constantly monitor what's going on with the network. This is one area of the help desk product installation that often requires some customization to ensure proper communication between the two systems.

Interfaces to network management tools such as Hewlett-Packard Co.'s HP OpenView, IBM's NetView and SunSoft, Inc.'s SunNet Manager are becoming common. This trend actually may aid help desk tools in becoming more proactive by detecting degrading conditions soon enough for help desk consultants to warn end users or take preemptive action.

The tool with the strongest network management integration is TroubleTrax 2.0 from StonyBrook Software, Inc. In short, Trouble-

Continued on page 40

NETWORK WORLD
SHORT LIST
1 9 9 5

Help desk tools

The Short List highlights products Network World *recommends you examine during the purchasing process for help desk tools. Products listed here include strong call tracking, problem resolution and external system links, features required for operating in an enterprise network environment.*

Answer Systems, Inc.
Apriori GT

Answer Systems is on the forefront of problem resolution with its patented Bubble Up technology, which suggests the most likely problem causes based on parameters that are unique to the caller, such as location, hardware or network configuration. The tool also supports other problem-resolution technologies, such as index filtering, full text retrieval and key word searches.

You can store case and knowledge information in a proprietary Apriori database or a third-party database from such vendors as Oracle Corp. and Sybase, Inc. The product links to a variety of external systems, including electronic mail, network management tools, paging services, fax servers and automatic call distributors.

Clarify, Inc.
Clear Logistics, Clear Quality, ClearSupport and Clear Support Diagnosis Engine

Subscribing to the notion of modularity for best-of-breed software, Clarify offers four products that can be used together to build flexible help desks. Functionality includes call tracking, workflow, problem solving, contract verification, defect tracking, field service, logistics, reporting, trend analysis, alerts and more.

Clarify uses a three-tiered client/server architecture in which the application runs on one server, while the case-tracking and problem-resolution databases run on other servers. The main problem-resolution tools include a deductive-reasoning knowledge base that prompts consultants with diagnostic hints, and a full text search system that lets consultants search through on-line documentation, technical notes and product specifications.

Inference Corp.
CBR2

Inference is one of the best-known players in the market and has very strong case-based reasoning technology. In fact, Inference's technology is bundled in many other vendors' help desk products. CBR2 has prepackaged knowledge bases for common Windows applications such as spreadsheets and word processors. Inference also sells CBR Express, an authoring tool for creating your own knowledge bases.

These knowledge bases can be spread across the enterprise on CD-ROM, diskette, or via the Internet or dial-in servers, permitting end users to try solving their own problems before calling the help desk. CBR2 supports a wide range of SQL and relational databases. Integration with network management platforms is planned for release in mid-1995.

Software Artistry, Inc.
Expert Advisor 2.0

Expert Advisor is a well-rounded tool that lets you get the ultimate in customization. Yet it has many usable features right out of the box. You get the source code and programming language with this product, which allows you to configure it to fit just about any scenario. The tool also has connectivity to E-mail, net management systems and mainframes.

Some of the strongest resolution technology on the market is found in Expert Advisor. In fact, there are eight different technologies in its repertoire, including a common problem database, hypermedia decision trees and adaptive learning techniques. With an add-on product called Expert Access, you can export a knowledge base into a format that end users can employ. Software Artistry also sells Knowledge-Paks, which contain knowledge bases for a wide range of popular products, such as Windows and Novell, Inc.'s NetWare.

Continued from page 39

Trax consists of several modules that capture Simple Network Management Protocol traps and make the information available to all users. It closely monitors the network infrastructure and logs problems accordingly. There also are elements of the usual help desk functions, such as logging and tracking cases, and problem resolution.

Several products also integrate with quality management tools to track bug fixes, product defects and enhancements. This integration is directed more to external customer service systems, but some internal help desks also use it.

Clarify has a module called Clear Quality that directly interfaces with Clear Support to include bug notices in the case resolution process. Likewise, The Vantive Corp.'s Vantive Quality links to Vantive HelpDesk 3.1.

The relationship among defect tracking and the help desk products goes two ways. First, help desk consultants can readily see when a bug or defect has been reported with a product or system. Second, the developers of that system can record new bugs as they are reported by end users.

OTHER STRONG SUITS

As you might imagine in a market such as help desk tools, there are many products with unique features.

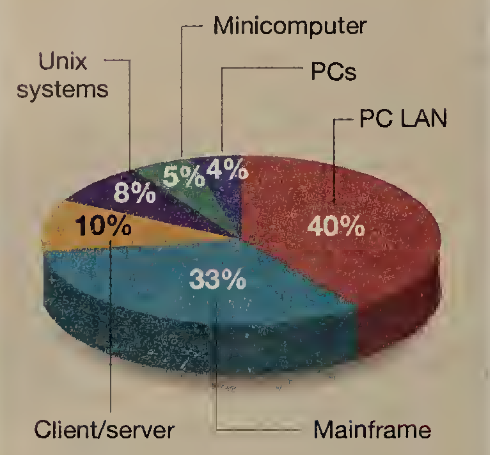
For a truly distributed database environment, Quintus' Customer Q 2.2 supports replication across heterogeneous database products from vendors such as Oracle and Sybase. This feature appeals to organizations with distributed help desks that want to share data.

Trellis Network Services, Inc.'s Corporate HelpDesk 2.0 runs on Lotus Notes, enabling it to use Notes' database as opposed to a relational database.

As a big player in the Unix and mainframe market, Peregrine Systems, Inc. offers its PNMS Client/Server, a suite of five applications running on Unix platforms such as Problem Management, Asset Management, Change Management, Inventory/Configuration Management, and Order and Catalog Management. Sterling Software, Inc., a major player in the mainframe arena, offers Solve:Central 3.1 running under MVS hosts in Systems Network Architecture nets.

Popular platforms

Where help desk software primarily runs.



Based on responses from 806 users.

SOURCE: HELP DESK INSTITUTE, COLORADO SPRINGS
GRAPHIC BY TERRI MITCHELL

Hammersly Technology Partners' Utopia includes modular training administration software that logs course types, facilities, providers, costs, enrollments and meeting schedules, with enrollment status and transcripts.

Aurum Software, Inc.'s Aurum SupportTrak can be used just as well as a customer service tool or help desk tool. SupportTrak has rich technology interfaces to systems such as order entry, accounts receivable, inventory control and general ledger. However, it lacks interfaces to network management systems.

BateTech is betting the farm on Microsoft's technology. BateTech's Customer-One 2.0 only supports Windows clients, Windows NT servers and Microsoft SQL Server as the back-end database. What's more, the E-mail and workflow component is dependent on Microsoft Mail and Microsoft's MAPI. Although Customer-One has a low starting price, many of the features that are standard in other packages are sold at an additional cost.

LOOKING AHEAD

The number of unique features will only grow over the next year as help desk tools mature. For instance, the tools will move to embrace higher levels of automation. That is, callers will be able to tap the help desk's knowledge base without ever needing to confer with a consultant.

Moreover, voice recognition will become increasingly important so a caller can access the system through voice commands via the phone. While this technology is sometimes employed today, it is fairly basic and will only improve as voice recognition technology improves.

Help desk products also will become

Continued on page 42

Knowledge bases give users all the answers

When you want help desk consultants to appear to end users like one of those brainy TV game show contestants who seems to know everything, it's time to investigate knowledge bases.

One of the most popular problem-resolution features found in enterprise help desk tools, knowledge bases store a vast amount of information that can provide clues on how to resolve a problem. A knowledge base can store any kind of information, including historical details about previously solved cases, technical notes, error messages and their meanings, or listings of known bugs in various products.

Knowledge bases require the use of some type of problem solving technology, such as a text retrieval system or case-based reasoning (CBR). Of these technologies, the preferred method to tap stored knowledge is CBR, which operates under the premise that the consultant can use historical information about previously solved cases to attempt to resolve the problem at hand.

The consultant types in symptoms or a brief problem description. The CBR analyzes the key elements of the problem and weighs them against historical data in the knowledge base. The CBR then returns a list of suggested solutions or questions the end user can be asked to help further define the problem.

The most effective knowledge base contains data on hundreds or thousands of problem scenarios and resolutions. It can take months to develop a knowledge base good enough to cover most of the problems and resolutions that users are likely to encounter.

You can save time by buying ready-to-use knowledge bases. These packages also take some of the sting out of introducing a new product to the network. The canned questions and responses of the CBR tool mean the consultants don't have to start with a blank screen when calls start coming in.

Though canned knowledge bases aren't inexpensive — Software Artistry, Inc. sells each of its KnowledgePaks for about $5,000 — they can save you money in the long run by reducing the time it takes to put the knowledge to use. If you had to pay an expert consultant to list every possible question and response, the cost could easily exceed the purchase price of a package.

Three of the dominant players in the canned knowledge base market are Inference Corp., ServiceWare Inc. of Oakmont, Pa., and Knowledge Brokers, Inc. of Irving, Texas. Many help desk tool vendors bundle Inference's case-based retrieval technology and prepackaged knowledge bases into their software.

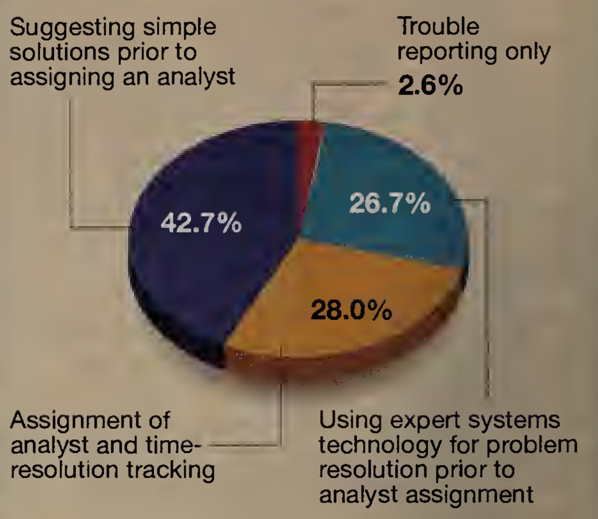
Knowledge Brokers also uses Inference's technology to develop and access its canned knowledge bases, which then can be employed with a broad spectrum of help desk products. ServiceWare generally uses the knowledge delivery technology of various help desk tool vendors, such as Software Artistry, or general-purpose tools, such as Folio Corp.'s Folio Views, to tap the rich information in the packaged knowledge bases.

Of course, it's entirely possible to create your own knowledge base. Inference's CBR Express is one of the most popular authoring tools for creating a CBR knowledge base. CBR Express helps you build screens that display the prompts and clues for resolving problems. Once a knowledge base is created using CBR Express, you can utilize Inference's CasePoint technology to retrieve and view pertinent information.

Reader views on help desk tools

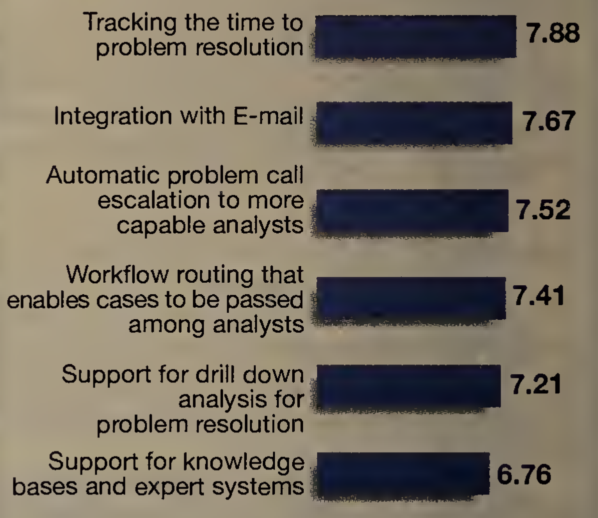
Based on 75 interviews.

Aside from trouble reporting, how do/will you primarily use your help desk software?



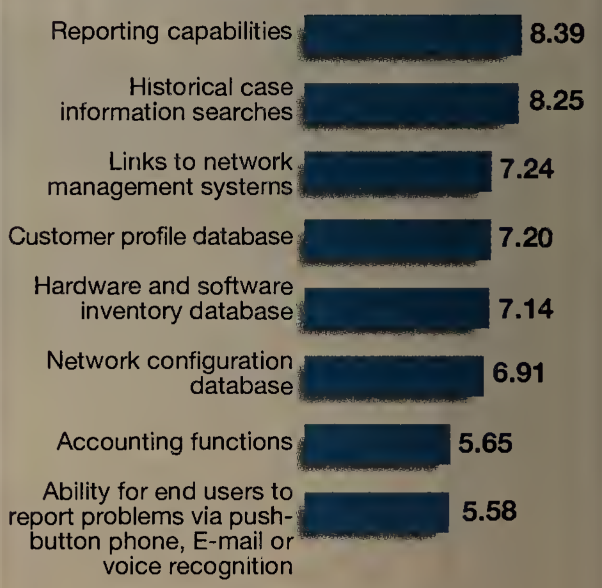
How important are the following resolution features in your selection of a help desk tool?

Based on a highest possible score of 10.



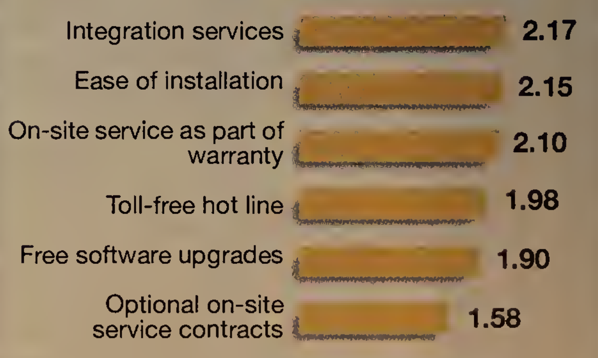
Key selection and purchasing criteria

Based on a highest possible score of 10.



Key service and support issues

Based on a highest possible score of 3.

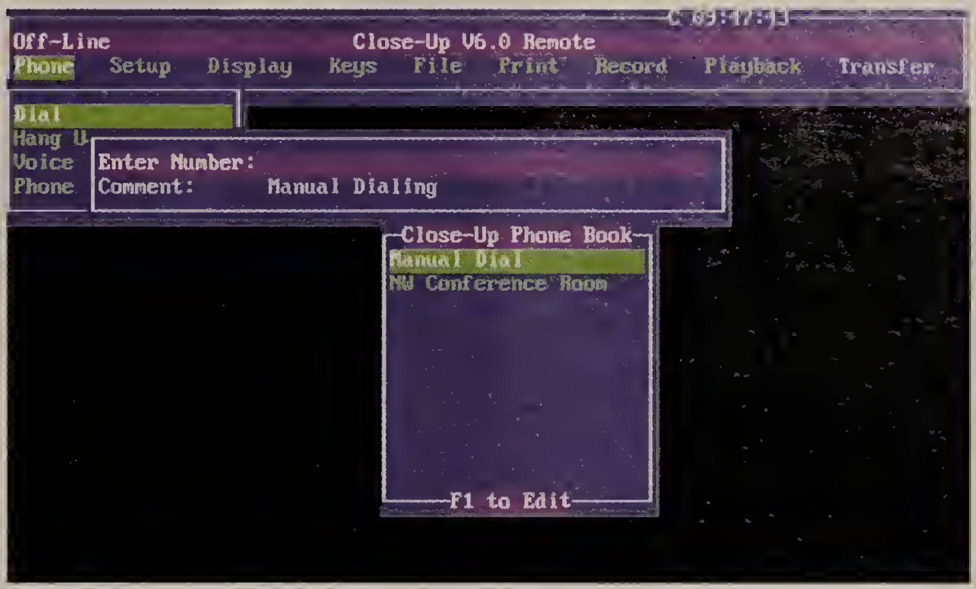


Focus Data, an independent market research firm in Framingham, Mass., conducted this survey. Focus Data specializes in gathering primary data from end-user organizations regarding their enterprise network environment needs. For more information about Focus Data services, call Mona Dabbon at (508) 626-2556.

Focusing in on Close-Up

Norton-Lambert's remote control application is fast but lacks support for Windows and networks.

By Lee Schlesinger



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Enter Number:
Comment:        Manual Dialing
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Figure 1: In addition to making a connection, Close-Up's remote menu interface lets users print files as well as record and play back screens and sessions.

Although Norton-Lambert Corp.'s Close-Up remote control software is not an enterprise-level product, our tests show it can be handy for DOS users that need to dial in to access applications on a network.

We left Close-Up out of last month's remote control software reviews (*NW*, Jan. 23, page 59 and Jan. 30, page 40) because it is not fully Windows-based, although it is Windows-compatible.

For that reason, you cannot compare the test results for Close-Up directly with those of the other products; Close-Up's DOS foundation avoids some overhead imposed by Windows internals. That said, Close-Up is faster than any of the other products at remote control and a solid performer in file transfer. The trade-off, of course, is that its interface lacks the ease of a fully Windows-based product.

STARTING LINE

Installation of Close-Up is simple. Users can install support for host operation, remote operation or both, and for DOS hosts and remotes, Windows hosts and remotes or both. The installation routine detects the presence of another remote control package and attempts (successfully, in our case) to remove its remnants from SYSTEM.INI.

Next, a user must decide in what environment to run the product. Users can run both the host and remote components by clicking on Windows icons. The host icon invokes a Windows program, although it requires that users run a terminate-and-stay-resident (TSR) program before entering Windows. By default, the TSR takes up 75K bytes of lower memory, but there are ways to minimize this bite. Clicking on the remote icon, however, invokes a Program Information File that brings up a DOS program.

The remote component has a menu-based interface that lets users connect to hosts, record and play back sessions, and perform a few other operations (see Figure 2).

File-transfer performance

Figure 2

Transfer path	Throughput (K byte/sec)
Compressed	
Remote to host	2.60
Host to remote	2.60
Uncompressed	
Remote to host	6.12
Host to remote	5.92

We found remote control performance under Close-Up to be highly variable even within the context of a single session on the same dial-up line. The product employs a technique called Photographic Memory to capture previous screen data, so operations that use repetitive screens have better performance.

Our first run of a WordBasic macro took 240 seconds — on the slow side of the products we tested last month. Our second run improved to 144 seconds — even faster than the previous champion, Traveling Software, Inc.'s LapLink for Windows, when using parallel port modems. A third run left that record in the dust, taking only 113 seconds.

We kept testing to see where this progression would end, but we found that on the fourth test, Close-Up slowed to 183 seconds. Subsequent runs turned in results of 162, 113 and 213 seconds before we wearied of the process.

Occasionally during operations, the Windows cursor icon would change shape to that of the Close-Up icon, a triangle made up of four smaller triangles that evokes the image of Darth Vader. It certainly was an indication that the dark side of the Force had taken over our computer because all action paused for a moment when this icon appeared.

A company source said the icon usually appears to indicate a problem in the transmission between the modem and the computer, such as a data overrun. There seemed to be no consistency in when the icon appeared.

File transfers are not as simple as remote control for Windows users. All transfers must be invoked by the remote user from the DOS-based menu; there's no Windows file transfer or chat. The catch-22 is you can't get to the DOS menu while you're in remote control, and to get out of remote control, you have to disconnect from the host and, therefore, lose the ability to transfer files.

What's the solution? Remote users who want to transfer files or chat must run a DOS program called CRemote to make the connection, instead of connecting by invoking the Windows icon. This enables them to connect to a remote PC, run Windows, then press a hot key to invoke the remote menu on the remote PC and initiate the file transfer.

Close-Up's file-transfer throughput met those of our top Windows packages — LapLink and Microcom, Inc.'s Carbon Copy — for compressed files but showed only average performance with uncompressed files. We tried running our remote control test macro using this con-

Continued on page 42

NET Result

Product: Close-Up

Pros:

- Speedy remote control and file transfers.
- Script files that automate tasks.

Cons:

- Remote component is DOS-based only; no Windows.
- No ability to work across networks.
- No support for parallel port modems.

Vendor:

Norton-Lambert
P.O. Box 4085
Santa Barbara, Calif. 93140
(805) 964-6767

Price: $199

Review

Continued from page 41

nection method to see if there was a performance penalty, but we didn't find one.

MORE HANDY UTILITIES

Close-Up's chat utility is DOS-based only; it can't be accessed from Windows. Both local and remote users' typing appears in the same small screen window, neither labeled nor in different colors to indicate who typed what.

Like Stac Electronics ReachOut Division's ReachOut, Close-Up offers virus checking, but instead of ReachOut's proprietary engine, it lets any installed antivirus program look over files as they're being transferred.

The product's terminal emulation is not one that we'd recommend. It's solely DOS-based, with only very simple functions available on its menu. Its only binary file-transfer mechanism is Xmodem.

One of Close-Up's best features is its ability to automate file-transfer tasks via task files — essentially scripts. Task files must be created in a text editor; there is no script editor facility and no ability to record a script based on user actions.

But the syntax for task files is simple, with commands to run at a given time, connect to a given host and send or fetch files.

Close-Up's transaction log is a nice security feature. It must be enabled manually via a command-line argument to the host program, after which it logs a record of who logged in (based on the password they entered to gain access), how long they stayed and what files they transferred.

The log is always named CLOSE-UP.SES and may be created with the hidden attribute set to keep it from being seen by casual browsers.

Close-Up's documentation is a bit breathy, with plenty of exclamation points and underlines, but it's well organized and clear.

On the whole, Close-Up is a good alternative to Traveling Software's LapLink for those users who don't mind working in DOS or prefer speed over ease of use, and who don't need network remote control. ◘

HOW WE did it

We installed Close-Up on two Compaq ProLinea 4/66s with 8M bytes of RAM connected via two Microcom DeskPorte Fast modems and on a NetWare 3.12 network in our lab at *Network World*. We used Quarterdeck's QEMM Version 7.5 to optimize memory on our personal computers. Our Windows shell was Norton Desktop 3.0.

To test file transfers, we sent a 363.5K-byte Excel 5.0 spreadsheet file back and forth between the remote and networked PCs. We then compressed the spreadsheet using PKzip 2.04g down to 103.9K bytes and transferred the compressed file to see how well Close-Up performed with uncompressable data.

To check out remote control performance, we ran a Microsoft WordBasic macro that made changes to a long text file. There are many repetitive strings in our test file to give products with efficient screen caching algorithms a chance to show their abilities.

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more proactive, searching out problems before they occur. The tie-in to network, desktop and application management systems will be strategic in meeting this need.

Help desk vendors are beginning to take advantage of the standard APIs for SNMP-compliant network management tools and are exploring the developing specifications of the Desktop Management Task Force's Desktop Management Interface.

Finally, help desk tools will expand their scope. Instead of being simply the point of contact for all computer-related problems, they will be the focal point for all business-related questions.

For example, the human resources department will make benefit information available through help desk resources. Employees will call one number to report a printer problem or request insurance data. This expanded role will require many more interfaces to external systems, further proving the value of open systems. ◘

➡ Musthaler is vice president of research at Currid & Co., a Houston-based technology consulting firm. She can be reached at (713) 789-5995.

In a Nutshell

A **PRIMER** *on emerging technologies*

Legacy LANs live on due to advent of ATM emulation service

By John Morency

With millions of Ethernet and token-ring nodes installed on today's shared-media LANs, it's easy to understand why you might loathe replacing your existing LAN infrastructure to accommodate ATM.

You can thank your lucky network nodes that the visionaries who guide the Asynchronous Transfer Mode movement foresaw the need to support legacy LANs. The ATM Forum is developing an ATM LAN emulation standard that will enable existing shared-bandwidth LAN nodes to operate alongside devices that hang off ATM switches.

ATM's LAN Emulation Service is the means by which a switched ATM LAN can appear as either a standard Ethernet or token-ring segment. Ethernet and token-ring frames from legacy LANs are disassembled and encapsulated into ATM cells by an edge switch.

The initial version of the standard will not provide virtual LAN support for mixed LAN technologies. Only virtual LANs that are all Ethernet, all token ring or all ATM are supported.

Conversely, cells received from ATM end stations are assembled into LAN frames by the edge switch before being forwarded to their target destination. In either case, both the legacy LAN and ATM end stations perceive they are part of a single shared LAN segment.

The objectives of the LAN emulation specification are twofold.

First, LAN emulation will define how switches can be transparently utilized as a high-speed backbone to support LAN-to-LAN communications between existing LAN segments. Implicit in supporting these communications is a standardized means of performing frame-to-cell conversion, as well as cell formatting and the use of standardized ATM call processing services as defined in the ATM Forum's User-to-Network Interface (UNI) 3.X specifications.

Second, LAN emulation services also will allow end stations on existing LAN segments to transparently interoperate with devices directly attached to an ATM network as if they reside on the same physical segment.

This latter service is known as the emulated LAN or virtual LAN service.

The ATM Forum began work on LAN emulation (called the L-UNI or loony specification) in January 1994, with public availability of 1.0 expected in the first quarter. That work is on track, and some ATM switch and hub vendors are on the verge of offering their own implementation of the standard.

BREAK FROM TRADITION

Before we get too carried away, consider the impact of ATM on a traditional shared bus LAN environment. Devices are attached to LAN segments, which may need to communicate with nodes on other segments. Today, those devices will communicate with each other across a router-based internet.

In a LAN emulation scenario (see graphic), Edge switch F — which may be a hub outfitted with an ATM switch card — could replace the routers for Segments A through D by providing direct LAN connections for all desktop devices. This hub, in turn, would connect into ATM switch G. The servers then could attach directly to ATM switch G.

This would allow you to create a single virtual LAN, composed of both the desktop devices attached to Switch F and the direct server connections. Such a configuration would offer the benefits of both reduced complexity through the elimination of LAN-based routing, plus enhanced server network capacity via direct ATM connections to each of the servers.

As currently specified, ATM LAN emulation requires two components. A LAN emulation client would typically be provided in an edge switch, router or ATM-attached server. By contrast, LAN emulation servers would be found in either edge or ATM switches, although other implementations are also technically possible (such as a directly attached ATM end stations).

LAN emulation servers come in three flavors: a LAN Emulation Server (LES), a Configuration Server (CS), and a Broadcast and Unknown Server (BUS). Each server communicates directly with the LAN emulation client and has a unique role in providing LAN emulation.

The BUS is used for multicasting, and also helps to locate a configuration and LAN emulation server for a client; the LES handles frame-to-cell address mapping; and the CS assists a client in selecting an LES.

In our previous example, a LAN emulation client implementation would be part of LAN switch F, while all LESs would run in ATM switch G. No modifications would be required in any of the desktop clients, but Servers S1, S2 and S3 would require ATM driver software supporting the functionality of a LAN emulation client.

Some key points about LAN emulation are worth noting. First, unlike the virtual LAN support found in some of today's switched LAN products, LAN emulation supports establishment and maintenance of virtual LANs on behalf of end stations that may be located across any arbitrary ATM switch topology.

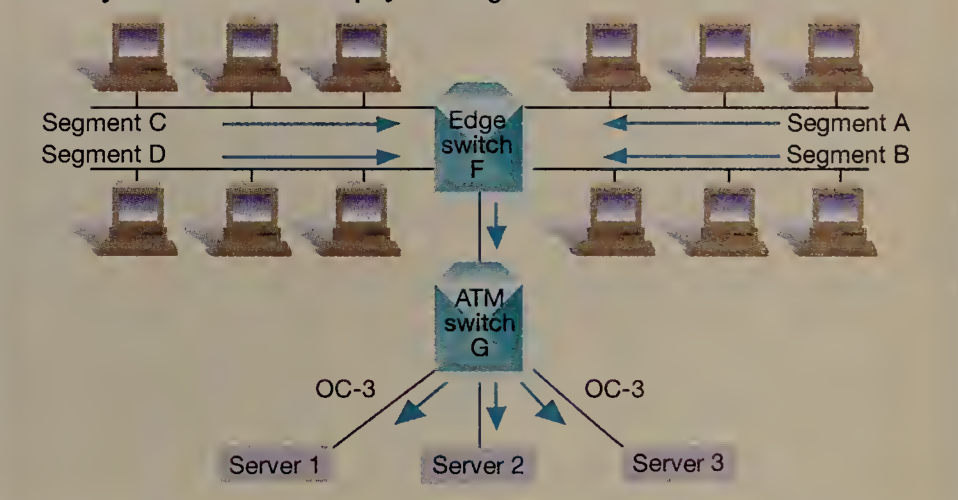
In other words, your virtual LAN need not be confined to a single segment or switch. Second, the initial version of the standard will not provide virtual LAN support for mixed LAN technologies.

Only virtual LANs that are all Ethernet, all token ring or all ATM are supported — direct Fiber Distributed Data Interface support is currently not defined; FDDI frames need to be translated into either Ethernet or token ring prior to being forwarded onto a virtual LAN.

Supporting mixed media would have required the addition of routing or translation bridging, and would have needlessly complicated the specification.

LAN emulation over an ATM network

LAN segments feed into an ATM edge switch, most likely a hub with an integrated ATM module, that allows LAN nodes to communicate with downstream servers as if they reside on the same physical segment.



GRAPHIC BY ANNE GIANCOLA

SOURCE: STRATEGIC NETWORKS, ROCKLAND, MASS.

In addition, this would adversely impact ATM's otherwise low latency properties. Thus, to keep things simple, virtual LANs are kept as close to physical LANs as possible by supporting a philosophy using bridges between similar virtual LANs and routing between different types of virtual LANs.

Because the LAN emulation specification will not be completed until early 1995, no actual product implementations are now available for evaluation and testing. Some vendors, however, support early versions of the standard within their products and pledge full support when the final version becomes available.

You should be careful, though, to obtain concrete support time frames before committing to any early implementations.

➜ Morency is director of network management services at Strategic Networks Consulting, Inc. He may be reached via the Internet at 0005786914@mcimail.com.

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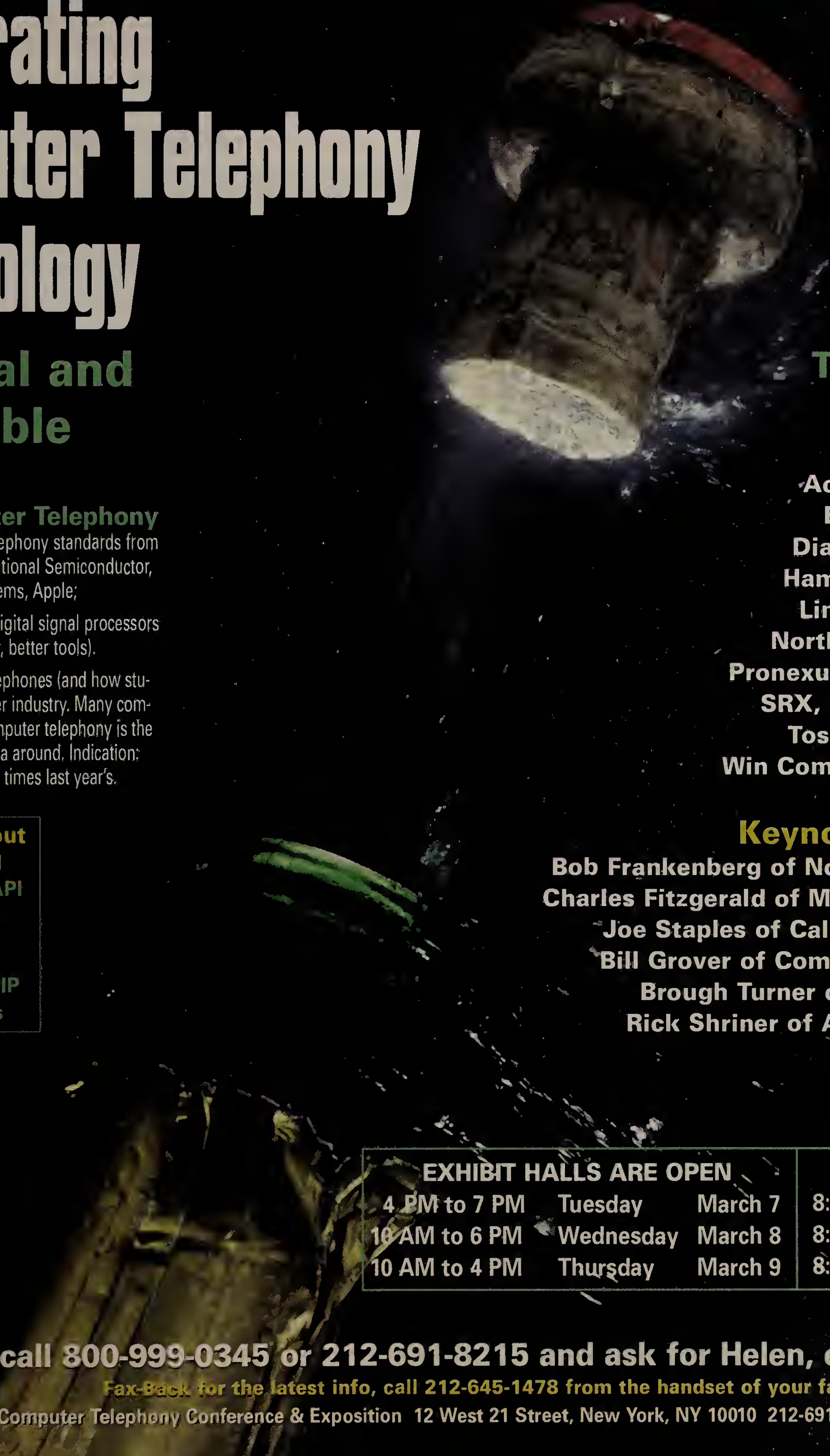

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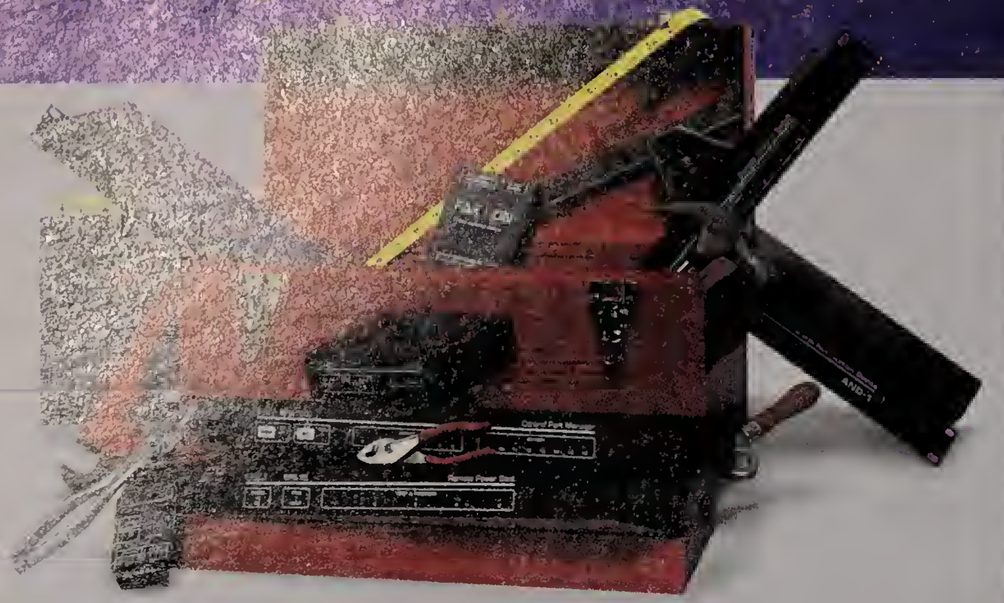

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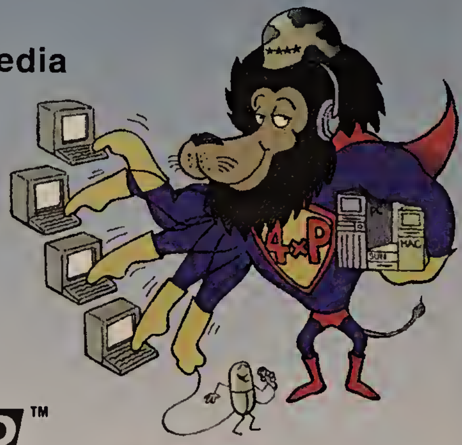

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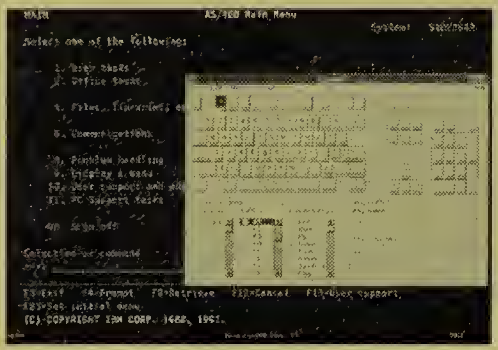

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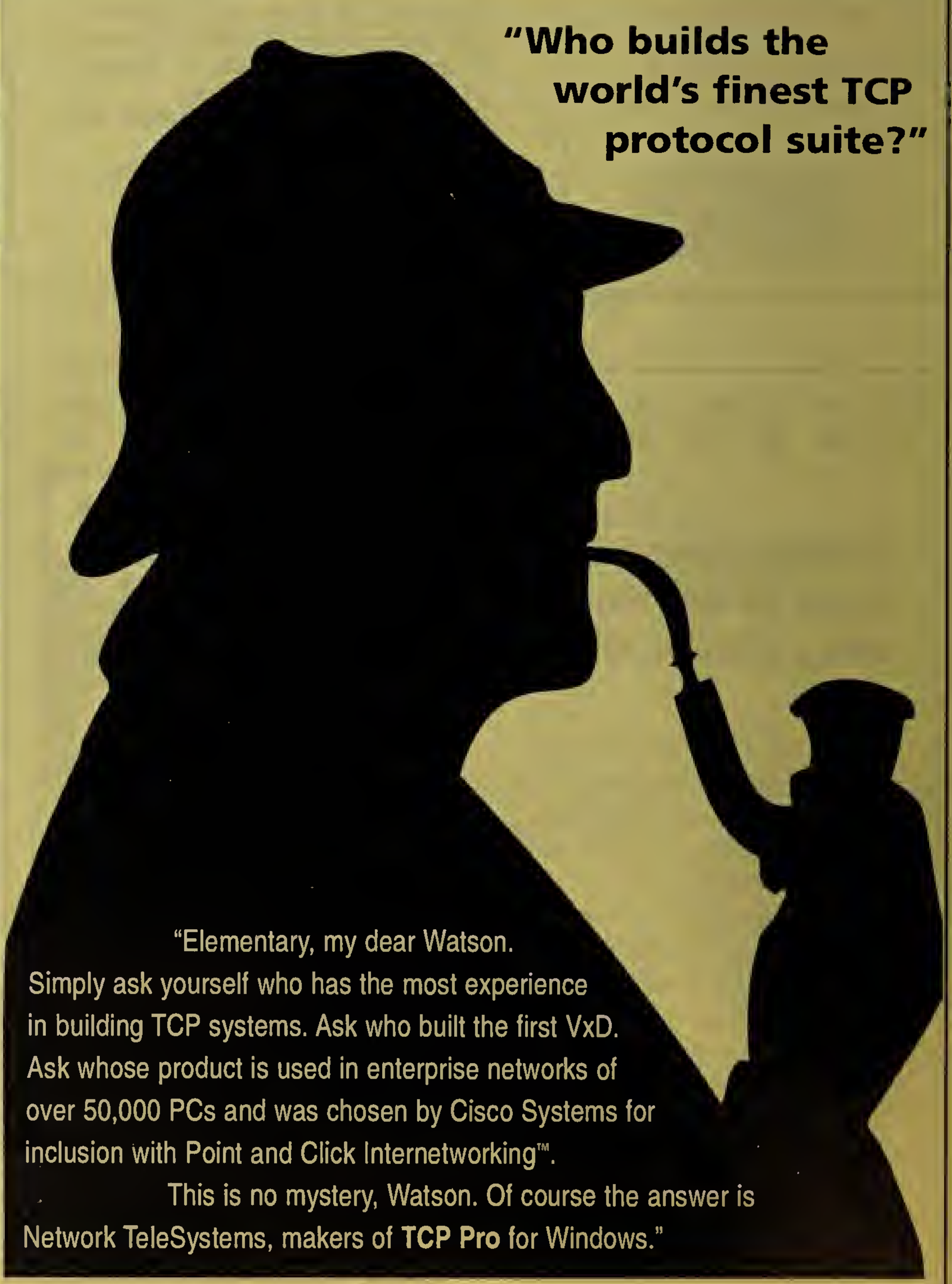
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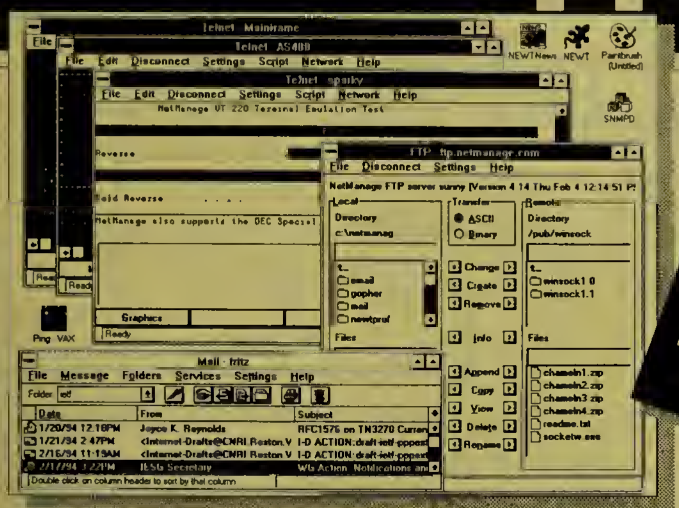

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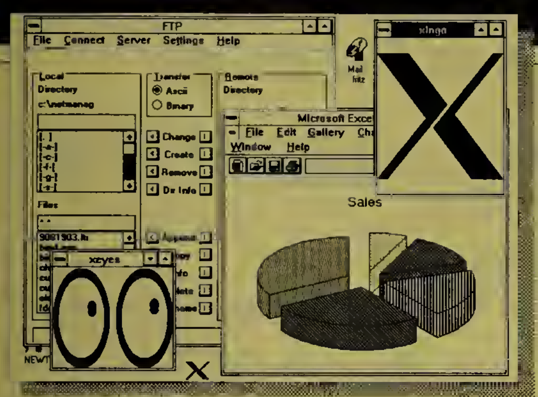

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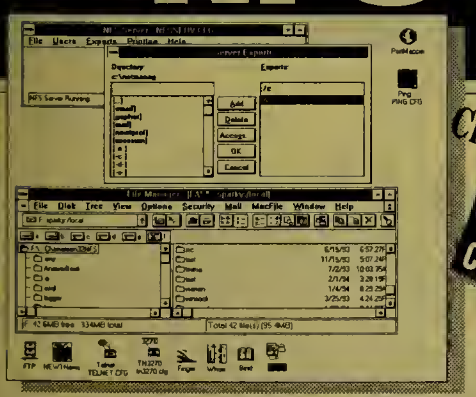

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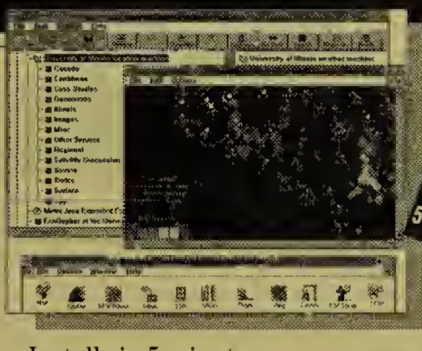

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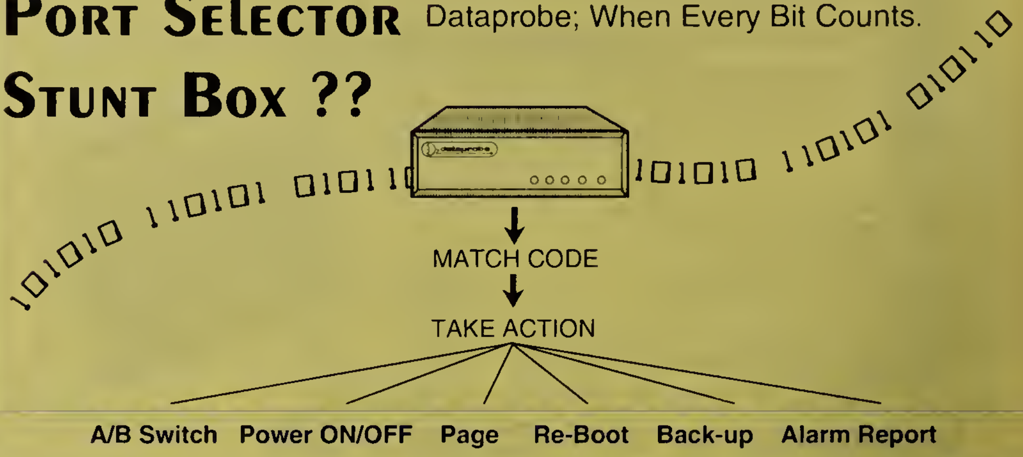

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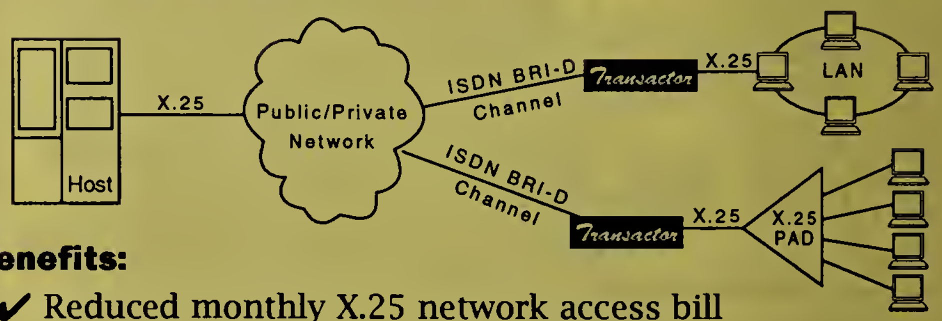

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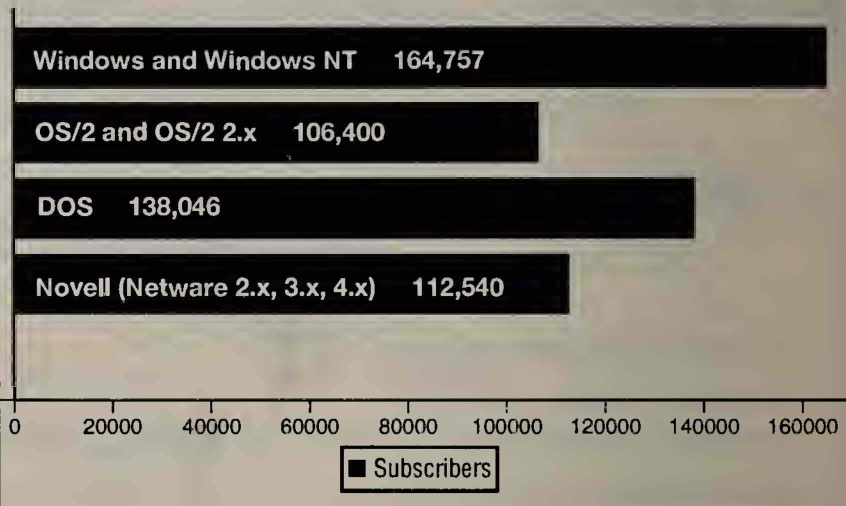

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Dow Jones

Continued from page 1

ers to cereal makers hedging the cost of raw ingredients.

The two keys to its business are reliability and split-second information delivery, said Anthony Tracey, vice president of global operations. The new net will mean improvements in both areas.

"Customers will time us against our competitors with a stopwatch, and we're accountable for the slightest delay," Tracey said. Most customers, in fact, use Telerate and Reuters just for resiliency's sake.

Until now, Telerate's global net has been based on X.25 and time-division multiplexing technology. The North American backbone consists of seven major nodes, comprising AT&T Paradyne Acculink multiplexers that are meshed together over dual, diversely routed T-1 and fractional T-1 circuits.

Telerate spins a web around the world

Dow Jones Telerate is building a globally meshed WAN based on a design similar to that shown at bottom. The hybrid frame relay/TDM net will provide more redundancy and meshed connectivity than the current net, which has full TDM webs within regions but limited connections between them.

▶ Current — regional links

▶ Planned — global mesh

These muxes support Telerate's minicomputers and Terminal Page Processors (TPP), which distribute data to regional sites serving local customers.

That setup, while highly reliable, wastes bandwidth because Telerate's network load comes in peaks lasting just five to 10 minutes, coinciding with the activity of various markets around the globe.

"Because we're TDM-based, our pipes are sized for those peaks," Tracey said. "We're just not getting the economy of scale that we should."

The bandwidth-on-demand feature of frame relay services will let Telerate size its links for more average use while ensuring reserve throughput for peak loads. Frame relay's virtual circuit architecture also will support a fully meshed logical topology, something that is impractical to achieve with private leased lines.

A TDM mesh requires point-to-point leased lines from each location to several others. But frame relay needs just one access pipe per location to support multiple permanent virtual circuits to other network nodes, reducing the number of lines required.

Tracey is also discussing with carriers the promise of global switched virtual circuits, which can dynamically establish links as needed. He expects to use such services in about a year.

"We're also asking for contracts to five nines," he said, meaning 99.99999% guaranteed uptime. "Two years ago, they would've walked out the door laughing, but now they're considering it and still talking to us, which I find interesting."

Tracey would not divulge the savings that Telerate expects to reap, except to say that it is substantial both in actual bandwidth reductions and in the ability to absorb future growth.

PROPRIETARY NATURE

The company chose Netrix Corp. for its network rebuild, mainly because the Netrix #1-ISS Series 10 switch supports frame relay, X.25 and TDM circuits interchangeably on any port. That's important since Telerate mixes and matches whatever wide-area services are available in different parts of the world.

It also has to support dozens of secret, homegrown transport protocols developed over the years to efficiently deliver its various offerings.

At the same time, new TCP/IP-based services are being rolled out as many customers migrate to client/server distribution at their offices. These new IP-based services will run over frame relay where possible. Some, but not all, of Telerate's proprietary protocols also can be encapsulated in frame relay for less expensive transport over major links.

Like its homegrown WAN protocols, Telerate's network topology is guarded as a proprietary secret.

"There's no real name for this approach," said Michael Jones, Telerate's assistant vice president of operations, projects and planning. "It's basically a matter of cross-connecting primary and hot backups wherever we go."

The new switches will replace Telerate's existing muxes, leaving the topology largely unchanged, except for the size and number of links required.

Starting at the top, Telerate's three global domains — Europe/Africa/Middle East, Asia/Pacific and the Americas — are each served by a pair of geographically separate minicomputers mirroring each other in real time as they gather, corroborate and distribute market information. These pairs are connected over a meshed T-1 net to about 50 regional TPP pairs that handle distribution to local customers.

Where the volume of customer links warrants, the TPPs are connected by 45M bit/sec T-3 lines to the local carrier's point of presence, fanning out to customers' 56K bit/sec leased lines.

Response time to customer data requests is not the main issue in this network. Instead, the onus is on Telerate to supply real-time market updates with equal dispatch to all customers.

"It's kind of a broadcast system. But we don't like to push on that theme because 'broadcast' implies no error checking, when, in fact, that's one of the more important aspects of our design," Jones said. Telerate's homegrown protocols provide error checking, and Netrix also implements on its switches an X.25 broadcast feature with inherent error checking.

Netrix also supports management features that let managers of a domain, like Europe, control their own circuits and ports on switches in another domain. This lets the business react easily as needs change and also spares Telerate the expense of sending technicians to troubleshoot distant nodes.

GLOBAL ORDER

Phase 1 of Telerate's rollout has begun and will be finished by March, putting Netrix switches in six major sites serving its three main global arms. Then Phase 2 will kick in, lasting about a year as all 83 major WAN nodes are upgraded around the world.

But even with the new switches, the old order holds its grip. "We're still deploying new TDM line cards while this gets under way," Tracey said. "Business just never stands still to let you take one thing at a time."

Remote

Continued from page 1

NDS rather than in separate binderies on different servers.

They will also be able to administer multiple NetWare Connect servers and modems, and manage remote user traffic using a new module for NetWare Management System (NMS) called the NetWare Connect Services Manager (NWCSM).

NWCSM is a Windows-based utility that graphically displays NetWare Connect ports and connections, shows events in real time, analyzes the activity log, and provides accounting information and chargebacks for remote users.

Version 2.0 also will include support for the Simple Network Management Protocol, giving users the ability to manage NetWare Connect from any SNMP management console.

"Now that's good stuff, things you really need," one beta user said. "It will be easier to manage."

NetWare Connect 2.0 will be able to burst packets across a phone line — a feature that is available in a LAN environment. In burst mode, a client makes one request for a file from the server, which replies with a continuous stream of packets rather than waiting for the client to acknowledge each packet as it is received.

The management and administration tools will make NetWare Connect much more attractive, but adding PPP and SLIP connectivity are enhancements that are more basic and long overdue, said John Miller, data communications specialist for managed care firm Healthcare Compare Corp.

PPP connections can support a range of network protocols, including IPX, IP, Apple Computer, Inc.'s AppleTalk and Digital Computer, Inc.'s DECnet. PPP connections also automatically assign users an IP address when they connect so they can dial in from anywhere in the network. SLIP supports only IP and does not include dynamic IP addressing so its IP address configuration scheme is more rigid.

AUDITS AND SECURITY

Version 2.0 also will contain an enhanced Audit Log, a feature that tracks activity on NetWare Connect services. The enhanced Audit Log will contain new information, such as the maximum available connection speed, current connection speed, connection duration, bytes transferred and port usage, to let network managers track remote users more closely. The log will be accessible from NMS.

An enhanced security utility will let network managers closely control who can access the network by cutting off access to specific servers, limiting hours a server is available, and supporting a range of third-party security protocols and hardware. Administrators also can restrict access based on time of day, segments of the network and by setting a timer to cut off sessions.

Novell officials declined to comment on the new release and would not divulge pricing. The current version sells for between $595 and $5,995, depending on the number of ports.

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3Com

Continued from page 12

support no advanced SNA-handling capabilities.

The new routing features include Smart Filters, which reduce heavy broadcast and session polling traffic across the WAN by caching NETBIOS names and media access control addresses at the router. This minimizes the amount of explorer frame and session acknowledgment traffic by enabling the Boundary Router to remember names and addresses of nodes with which it previously communicated.

The payload compression feature is also designed to maximize bandwidth for SNA applications, reducing the packet header to one-fourth of its original size. For example, a 200-byte frame can be reduced to 50 bytes, providing a fourfold increase in packet transfer rate over Point-to-Point Protocol and ISDN links. Users only achieve a 2-to-1 compression ratio on X.25 and frame relay links because those headers cannot be compressed, Bryant said.

To ensure high availability and reliability of SNA traffic, Boundary Routing now supports automatic prioritization. This allows SNA traffic to travel across WAN links before other protocols, such as IP, IPX, AppleTalk and NETBIOS.

This technology is a priority for Petstuff, Inc., a Georgia-based pet supply chain that is using Boundary Routers with 56K bit/sec frame relay links to tie stores to its backbone network.

"Right now, through frame relay, you are not able to prioritize the SNA so that we get it in time," said Bob Willey, director of MIS for Petstuff. "With [automatic prioritization], we won't be timing out and we'll have absolute control of [SNA sessions]."

Another Boundary Routing enhancement is local termination of SNA and NETBIOS traffic. This allows NetBuilder routers to acknowledge receipt of SNA and NETBIOS frames without waiting to receive acknowledgment packets from an IBM front-end processor in order to keep an SNA session up.

Analysts said 3Com's competitors offer similar SNA routing support, but — with the exception of Cisco Systems, Inc. — not all of them offer Boundary Routing.

"The biggest difference that I see between 3Com's approach and competitive approaches [is that] 3Com has mixed some of the standards-based concepts — like the spoofing part of Data Link Switching — with proprietary Boundary Routing transport," said Thomas Nolle, president of CIMI Corp. in Voorhees, N.J. As a result, "they've made a pretty considerable advance in terms of the number of supported sessions. So if you're a user that has 2,000 or 3,000 controllers, that could be a big factor to you."

The SNA Boundary Routing capabilities will be included in the next major upgrade to 3Com's NetBuilder remote office software, due out in the second quarter.

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Reform

Continued from page 1

representing factions of the telecommunications-information-entertainment (T-I-E) industries were heavy contributors to the Republican leadership in both the House and the Senate (see graphic). Interestingly, provisos of the Pressler bill seem to favor many of those financial supporters, although some clauses are sure to irk backers. AT&T, for instance, reportedly is not keen on the time frame for permitting regional carriers into the long-distance market.

Major contributors leading up to the 1994 election include AT&T, the regional Bells, GTE, MCI Communications Corp., Sprint Corp., Motorola, Inc., the leading cable TV conglomerates, broadcasters, motion picture magnates and a number of trade associations.

Incidentally, presidential hopeful Sen. Bob Dole (R-Kan.) and Speaker of the House Newt Gingrich (R-Ga.) also received heavy contributions from T-I-E PACs last year.

The man of the moment in the House, Gingrich maintains he has an ambitious legislative agenda for the industry because he wants to usher in the information age. Among his best pals are futurist and author Alvin Toffler and information age writer and conservative intellectual George Gilder, of the Discovery Institute think tank.

Gingrich also sees eye-to-eye with Vice President Al Gore on many industry-related issues, including the Global Information Infrastructure and the need for a new national policy for the T-I-E industries. But Gingrich's immediate objective is telecommunications deregulation. The speaker has already met with his key committee chairmen — Rep. Tom Bliley (R-Va.), who heads the Commerce Committee, and Rep. Jack Fields (R-Texas), who steers the Telecommunications Subcommittee.

GORE

Gingrich has also hunkered down with industry leaders to plot what the House-sponsored legislation should contain. By press time, no Republican-sponsored House bill was available, but one is expected to be introduced soon. Senate Democrats, meanwhile, released their plan last week (see story, page 57).

Gingrich assures industry players that he strongly favors legislation designed to erase the lines that divide the different industry segments. He even supports a study designed to "zero out," or abolish, the Federal Communications Commission.

Sen. Pressler is coordinating his effort with Dole and Sen. Bob Packwood (R-Ore.), who chairs the Senate Communications Subcommittee. Dole believes the Modified Final Judgment (MFJ) that broke up AT&T and the Bell System on Jan. 1, 1984, is "the primary obstacle to telecommunications competition in the U.S."

There is also strong bipartisan support for telecommunication legislation this year. "We'll work with the Democrats and Al Gore [on T-I-E legislation]," Pressler says. "Vice President Gore has been a leader [in this area], and he can take all of the credit he wants."

Pressler has worked with Gore in the past, and believes he and the vice president can work "cordially, cooperatively and collaboratively," as one staffer put it, to establish a new policy for the industry this year. For his part, the vice president is reaching out and has courted Republican leaders since the early days of the 104th Congress. Gore has met with Pressler and Fields in a meeting described as excellent.

"Telecommunications reform is a prime example of legislation that we can work together on," Gore says.

THE TIME IS RIPE

By now, you may be thinking that you've heard all of this cooperative rhetoric before. So, what's different this time?

Several crucial industrywide business, regulatory and legal developments underscore that the time may be ripe for some clarity in the industry.

Mergers and acquisitions, for instance, are forcing the government to establish new policies that eliminate the lines that have traditionally separated various industry segments. A classic example is the Time-Warner, Inc./US WEST, Inc. joint venture.

"Because of the MFJ and the business restrictions placed on the regional Bells, and also because of the telephone company-cable TV cross-ownership restrictions, the Department of Justice mutilated the deal," says former FCC Commissioner Dennis Patrick, now president and chief executive officer of Time-Warner Telecommunications. "The Congress has to pass legislation that makes things easier on us all in the future." A Department of Justice official, who spoke anonymously, responds, "We didn't mutilate it. We merely performed cosmetic surgery."

On another front, users are beginning to demand one-stop shopping from major suppliers of telecommunications services and equipment. They are also calling for greater competition and less regulation. Gingrich pal Gilder is urging Congress to go along with users and let competition rip. He told attendees of a Washington political and policy breakfast that he believes the T-I-E markets should be deregulated.

The courts, however, appear to be getting in the way of competition and less regulation. For example, the courts have mandated that all carriers must file tariffs with the FCC, regardless of size. The FCC has repeatedly attempted to apply a doctrine of regulation that focuses solely on those entities that have market power or dominance.

The courts say they must apply the Communications Act of 1934, which states that all carriers must file tariffs. The courts are also in the midst of usurping the congressional ban on telephone company-CATV ownership. Congress does not want its policy power usurped and is opposed to the courts making policy on an ad hoc basis.

TROUBLE BREWING?

There is a mounting industrywide consensus that something must be done by Congress — and soon. Executives representing cross sections of the T-I-E industries, and responding to inquiries about the importance of pending telecommunications legislation, universally agreed that an early legislative directive "is essential to the industry's future growth and market potential."

That is not to say that everyone is on board. There are signs that AT&T is uneasy with the Pressler and Gingrich-Bliley-Fields proposals because it believes the local exchange markets should be open to competition — with full number portability — before the regional Bells are allowed to compete in the long-haul market. This is said to be the reason why AT&T insisted that former Senate Majority Leader Howard Baker (R-Tenn.), who was also former President Ronald Reagan's chief of staff, be hired as chairman of the Competitive Long Distance Coalition. Baker's mandate is breaking up the local monopoly.

This appears to be a fait accompli at first glance since all the parties agree that the so-called local exchange bottleneck should be ended either by legislation or by the existing regulators — the FCC or the individual states. So those who are inclined toward a conspiracy theory of policymaking believe that Baker's role is either to help kill the Republican legislative initiatives or, alternatively, keep the regional Bells out of the long-distance market until the year 2000.

In addition, some consumer groups are said to be apprehensive about the call to give the CATV segment of the industry significant regulatory relief, especially regarding the rates companies can charge for their services. Consumer groups claim they engineered the reregulation of the cable industry in 1992 and pushed for the FCC-mandated 17% rate rollback. All could be for naught, though, if the Dole-Pressler/Gingrich-Bliley proposals become law later this year because they will abolish rate regulation.

PAC contributions to key telecom legislators

Congressman	Political action committee contribution	Contributor
Sen. Larry Pressler	$2,000	AT&T
	$2,000	ALLTEL
	$2,000	MCA
	$1,500	US WEST
	$1,000	Cellular Telecommunications Industry Association
	$1,000	COMSAT
	$1,000	Philips
	$1,000	Sprint
	$1,000	Turner Broadcasting
	$1,000	United States Telephone Association
Sen. Bob Packwood	$5,000	National Cable Television Association (NCTA)
	$2,000	Turner Broadcasting
Rep. Tom Bliley	$10,000	AT&T
	$5,000	NCTA
	$3,500	Comcast
	$2,000	Time-Warner
	$1,500	National Association of Broadcasters (NAB)
	$1,200	Motorola
Rep. Jack Fields	$10,000	NCTA
	$9,000	NAB
	$6,500	Comcast
	$6,000	AT&T
	$6,000	NYNEX
	$5,000	Metropolitan Fiber Systems (MFS)
	$4,500	Southwestern Bell
	$4,000	US WEST
	$3,500	GTE
	$3,000	Fox Broadcasting
	$16,000+	16 others each contributing $1,000 or more

And while the Republicans strongly believe their efforts will win bipartisan and even White House support, there are signs that there could be conflict between the Republicans and the Democrats. For starters, longtime House Commerce Committee Chairman John Dingell (D-Mich.), who is still smarting from the Nov. 8 Republican surprise in the House, has already introduced House Bill 411, a near replica of the bill he proposed last year with defeated Rep. Jack Brooks (D-Texas), which passed through the 103rd House by an overwhelming majority only to be stalled by a lack of bipartisan support for its Senate companion bill introduced by Sen. Ernest Hollings (D-S.C.). Dingell is also fuming about a clandestine T-I-E closed summit hosted by Gingrich, Bliley and Fields in January.

"The summit appears to be inconsistent with the letters and the spirit of rules opening committee and subcommittee hearings," Dingell says. He wants to know whether he will be able to grill industry executives about the discussions they privately held with Republican leaders.

It's not clear either if all Republicans are on the same page. Packwood, who chairs the Communications Subcommittee, appears to have at least some minor disagreements with Pressler regarding the timing of opening up the long-haul market to competition from the regional Bells. He said he favors a Le Mans start to competition, using a metaphor for France's 24-hour race in which all drivers start at the same time. In other words, Packwood wants the regionals to have an opportunity to compete in the long-haul market before a three-year proposed waiting period (specified by the Pressler plan) would elapse.

But Packwood does agree with Pressler on CATV regulation introduced in 1992. "The cable TV reregulation act was one of the worst mistakes Congress ever made." Packwood says. "Congress reregulated cable TV at the worst possible time — just when competition to cable TV was beginning."

Dissent may also come from Sen. John McCain (R-Ariz.), who is not necessarily behind the Pressler bill. He wants to keep manufacturing restraints on the regional Bells for the next several years and was responsible for toughening up the rules that would be imposed on the regional Bells when they are allowed into manufacturing. A Capitol Hill staffer says McCain faces a persuasive home state, anti-Bell manufacturing lobby that includes Motorola.

So, what are the major elements of the Republican proposals for thefuture of the T-I-E industries? Pressler's Telecommunications Competition and Deregulation Act of 1995 has three phase

- **Transition to competition in one year.** The transition relates back to the opening up of the so-called local exchange bottleneck. It includes negotiated interconnection, unbundling of local network components, number portability and dialing parity, streamlined and consolidated subsidiary requirements, penalties imposed on the regional Bells for willful noncompliance, a revision of the universal service subsidy scheme, regulatory forbearance and foreign ownership reform.

Several of the proposals would require much longer than one year to implement and deploy, most notably number portability, which is a meaningful prerequisite to competition in the local exchange.

- **Remove barriers to competition.** Phase 2 of the Pressler legislation would include a one-year trigger to preempt state and local barriers to competitive entry. It would also lift the telecommunications-CATV cross-ownership restriction and propose the abolition of rate reform, as well as institute reforms for spectrum licensing, broadcast ownership and permit other utilities to enter the telecommunications services fray. But there is also a three-year trigger that would launch the era of so-called short-haul long-distance competition (basically intra-local access and transport area competition); it also would aim to remove the long-distance restrictions on the regional Bells and lift the manufacturing prohibition they now live under. And the three-year trigger would banish the requirement of dialing parity.

This phase would be both time-consuming and controversial. The lifting of the business restrictions has always been a hotly contested issue, while the regional Bells are already complaining that they will have to wait too long to get into the long-distance market. The delay, they complain, will result in no meaningful competition ever evolving in the long-distance telecommunications services sector. For their part, the long-haul carriers — AT&T, MCI and Sprint — will vigorously oppose regional Bell entry even after a three-year delay, especially if number portability has not been deployed by then.

GINGRICH

- **An end to regulation.** The third phase of the Pressler legislation calls for the FCC to institute incentive price cap regulation. Biannual regulatory reviews by the FCC would no longer be necessary, nor would the implementation of the forbearance doctrine that allows the FCC to ease, or even refrain from, regulating certain entities without market power.

The third phase does not mean a total end to regulation by the FCC or the states. So, where are we heading with so-called legislative reform of the T-I-E industries?

"The Pressler legislation, and the Bliley-Fields package to follow, confront an awesome array of political and ideological differences, bitter battles and conflicts within and among the different industry segments, and an alarming number of big egos," says one seasoned Capitol Hill lobbyist who spoke anonymously. "If the Republican leadership can confront and conquer all of that, then we will have new legislation by the end of the year."

GIVING IT A GOOD TRY

Pressler remains upbeat about his chances of bringing all of the competing political and business sides together; he is predicting passage of the bill by the summer or fall of this year.

"The administration was not out in front of the telecommunications bill last year," Pressler says. "I want the White House to be out in front. I'd love Vice President Gore to jump in, and President Clinton. We've got to have the White House onboard in order to pass a bill. Somebody's got to break this thing loose."

Pressler says he would love to see Gore tackle the issue as a project this year and wouldn't mind if Gore gets all the credit. "If we don't pass a bill this year, we won't be able to pass one in 1996 because of partisan politics. We're going to give it a good try this year."

The price for failure may be too high. A former Justice Department official says, barring legislation, the regulatory and judicial status quo would continue. "If Congress and the White House fail to pass legislation, then the mergers and acquisitions activity will be slowed, the line of business restrictions on the regional Bells will be maintained, and current regulatory practices will remain in place," says Rich Rosen, former head of the Department of Justice Antritrust Division's Communications & Finance section.

One industry leader adds another warning. "We need legislation to keep the industry abreast of global developments," he says.

Beyond the year 2000, the market will be global, and, in that context, the U.S. may account for only 20% to 30% of vendors' business. China will become a major revenue stream, and Europe will be a significant factor. The T-I-E business is a global one, and if the Washington policymaking establishment and the industry don't see it that way, then we are in danger of losing out on some enormous opportunities.

Gilder warns that if Congress stood in the way of allowing the different industry segments to consolidate, the era of broadband networks would be delayed by at least 10 years.

"It does not make any sense for Congress to force upon us a two-wire world if that results in a delay of the deployment of broadband services to the public. Just let the market take care of those issues; don't mandate anything," he says.

Debate over the legislative proposals will be intense and protracted. Some will likely focus on the long-standing status quo positions of the different industry segments, such as local vs. long distance, or video vs. data vs. voice. But if tomorrow's broadband networks are to make any economic and business sense, these differences must disappear quickly.

Users have no interest in what appears to them as self-serving arguments of the major carriers and vendors. Users are anxiously awaiting the broadband era, with limitless capacity at reasonable prices. In short, they want technology to get together with capital and let competition rip.

➾Pearce, a contributing editor to *Network World*, is president of Information Age Economics, Inc. He may be reached at (202) 466-2654.

Democrats offer alternative reform plan

The Republicans may be in charge on Capitol Hill, but the Democrats last week made it clear they will not be shut out of the debate on telecommunications reform.

Led by Sen. Ernest Hollings (D-S.C.), the nine Democrats on the Senate Commerce Committee presented draft legislation that was crafted as an alternative to the Republican bill sponsored by Sen. Larry Pressler (R-S.D.).

But key differences between Democrats and Republicans on how easy it will be for the regional Bell operating companies to enter the long-distance market could presage the same partisan battles that left last year's reform bill dead in the aisles when Congress adjourned.

The Republican bill puts pressure on the RBOCs to negotiate with competitors wanting access to the local loop but automatically lets them into the long-distance business after three years. The Democrats' approach is far tougher, requiring the RBOCs to gain approval from both the Department of Justice and the Federal Communications Commission under a "public interest" test before entry into long distance.

"This legislation allows regulation to be removed after competition exists," Hollings said. "But competition must be the prerequisite to deregulation."

The Hollings draft bill retains much from last year's bill, particularly the made-in-America requirement that the Bells must adhere to in manufacturing — another area prohibited under the decade-old Modified Final Judgment.

Pressler, whose position as committee chairman gives him control over what legislation is introduced, vowed to work with the Democrats on a compromise measure that would win broad support from Republicans and Democrats.

"This legislation allows regulation to be removed after competition exists. But competition must be the prerequisite to deregulation," Hollings said.

BY ELLEN MESSMER

Win95

Continued from page 1

connected client," said Bob Taniguchi, Microsoft's product manager for Windows 95 connectivity. "So much focus has been put on the server at the network operating system, but you need some plumbing at the client [too]."

Banyan next week will begin beta-testing its Enterprise Client for Windows 95, which lets the firm's customers integrate their Windows 95 desktops into both VINES and Enterprise Network Services (ENS) networks.

"From the desktop, the customer could maintain accessibility to Banyan's enterprise services, messaging, management and directories as they do today," said Nancy Cappuccio, Banyan's clients product manager.

Once a Windows 95 desktop is plugged into a VINES or ENS network, that client also has access to Banyan services on other platforms, including Unix and NetWare.

Banyan has worked with Microsoft on this development for about a year, Cappuccio said. "We believe the Windows 95 client will be on the majority of desktops five years from now, and we want to allow the integration of the operating system on the desktop that best fits users' needs," she said.

Digital will release drivers to support Windows 95 via its Pathworks products, which provide file, print and management services for different NOSes.

FTP has used the API to develop a Network File System client that runs on Windows 95's built-in TCP/IP stack.

"You'll be able to initiate the network installation of our NFS client from within the Windows 95 desktop," said John Keyes, FTP's product-line manager for strategic technologies.

In effect, Microsoft's approach makes Windows 95 a standard network client by providing a common API for NOSes.

"It makes it easier for both corporate developers and commercial vendors to write client/server applications," said Rob Enderle, an analyst at Dataquest, Inc. in San Jose, Calif.

"When you install the operating system, you have the built-in capability for it to connect to the network, be configured and have access to services," he said. "The application developer can concentrate on the host or server part of their application and differentiate their products that way."

This approach builds on current features of Windows for Workgroups, which provides a network interface from the Program Manager but supports only one server connection at a given time, Taniguchi said.

One vendor that has not endorsed NPA is Microsoft rival Novell, Inc. But FTP and others will give Windows 95 users access to NetWare services via NetWare Loadable Modules. ⧄

NETWORK WORLD

161 Worcester Road
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Back to Reality

Telco regulations deserve the trash heap; flogging Microsoft isn't worth it.

BY DAVID J. BUERGER

It's too bad that the people who know how to run the country are busy driving cabs, cutting hair, running networks and writing newspaper columns.

Most of us sit on the sidelines and wonder what the politician and lobbyist geeks in Washington, D.C. are inhaling.

Geeks, I say? Yes, just like many people we know in the computer networking biz. The day when people can talk about their business in plain English is when they graduate from geekdom to normality.

The long-promised reform of telecommunications law, chronicled this week on page 1, stirs hope among those of us who'd just as soon see the mountain of telecom regulations tossed in the circular file.

REGULATORY INC.

Here is the gist of the story: Lobby money sprouts from local, long-distance and cable TV corporations trying to protect their regulated cash flow. At the same time, they are trying to tap into each others' regulated cash flow – all couched in the name of competition.

The government, of course, tells us that it is our buddy. It protects us from profiteering and guarantees universal access to alt.binaries.pictures.erotica.

Both stories sound fishy.

Anticonsumer

Despite FCC Commissioner Reed Hundt's proclaimed love for competition as the key to building the information superhighway, that agency is trying to force Bell Atlantic Corp. to charge users more money for ISDN service. (Have you ever heard of a phone company turning away money? Read on.)

The debate centers on the definition of a telephone line. This used to be easy: A line was a copper cable you pulled from one point to another. Technology now permits us to send data through many channels over the same physical link. More for less, right? Well, not exactly.

The FCC's wisdom is that businesses and consumers must be charged for the number of channels used, not the physical link count.

ISDN Basic Rate Interface users thus will be dinged for two subscriber line charges instead of one. ISDN Primary Rate Interface users will be privileged to pay for as many as 24 line charges instead of one. My math says that's less for more – about 30% or more depending on your configuration.

The same formula will apply to those of you who use Centrex services.

Bell Atlantic knows that this math is stupid. The extra charges will hinder, not push, acceptance of ISDN.

Another phone company, US WEST, Inc., wants to take the money anyway. Of course, US WEST already charges one of the highest rates for ISDN service, so its executives must be really high up in those Rockies.

Maybe Newt Gingrich's plan to "zero out" the FCC isn't such a bad idea after all.

Zeroing out a zillion other regulations also sounds good. Let the telecommunications-information-entertainment industrial complex compete on the merit of its services and price. That sounds a lot simpler than pseudo-competition by regulated behemoths.

And lest we forget, it definitely would be good for us consumers, too.

Intuitive judgment?

The seesaw action last week rejecting Microsoft Corp.'s antitrust settlement with the Justice Department shows that what is good for one federal agency isn't necessarily good for another.

A cabal of Microsoft competitors persuaded U.S. District Judge Stanley Sporkin to step up wrist-slapping, a move that doesn't bode well for Microsoft's planned $1.5 billion acquisition of Intuit, Inc.

Microsoft has not done well in the enterprise networking market. And its move to pick up Intuit reflects an attack from yet another direction. Microsoft hopes that by controlling financial transactions for the masses (working at the enterprise from the bottom up), it will eventually gain control of the sum.

Ironically, the wrangling about Microsoft's "influence" over the electronic commerce market seems odd. E-commerce is still just a dream, but so is Windows 95, Microsoft Network and other vaporware. Microsoft dreams of dominating E-commerce. But it also has dreamed of dominating other domains, and has failed.

The lesson is that buyers aren't fooled by empty promises. The government should leave Microsoft alone to succeed or fail by itself.

And as for the competitive cabal, those vendors should focus on beating Microsoft with better products. Regulating the software business, like what is done with telephony, would be a move back to the dark ages.

Priestly courtesy

Miss Manners' influence has reached Italy, where the Catholic church just advised its priests to leave cellular phones turned off while hearing confessions. Seems like a woman who was bearing her soul didn't appreciate the anytime, anywhere ring of her priest's cellular phone.

Sounds like advice some of you might like to give your bosses, even if you'd prefer not to confess your sins.

➜ Buerger is an Atlanta-based industry consultant and contributing editor to *Network World*. He can be reached at (404) 495-7494 or at dbuerger@pipeline.com.

How to reach us

Call: (508) 875-6400
Fax: (508) 820-3467
Write: *Network World*, 161 Worcester Road, Framingham, Mass. 01701
Internet: network@world.std.com
MCIMail: 390-4868
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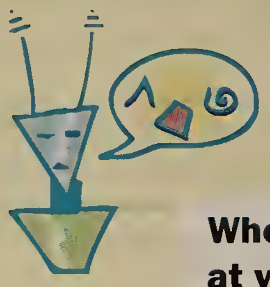


CyberSpeak

Voices from the reader network

Who makes wireless equipment and service decisions at your company, the network and systems staff or the business unit?

◆ "Cellular telephone decisions are made at the remote locations, usually by business unit managers.

"However, purchase decisions concerning [radio frequency] equipment – such as 3270 and 5250 hand-helds that connect back to the host for finding out inventory levels and such – and the wireless service provider are made by the corporate telecommunications department."

James Tafel, manager of telecommunications, Amway Corp., Ada, Mich.

◆ "Each of our distributors makes [its own mobile] decisions, then the distributor and engineering group supports them. So far, there is no involvement of the central systems or network staff."

Niall O'Doherty, member of the management services group, a large West Coast winery

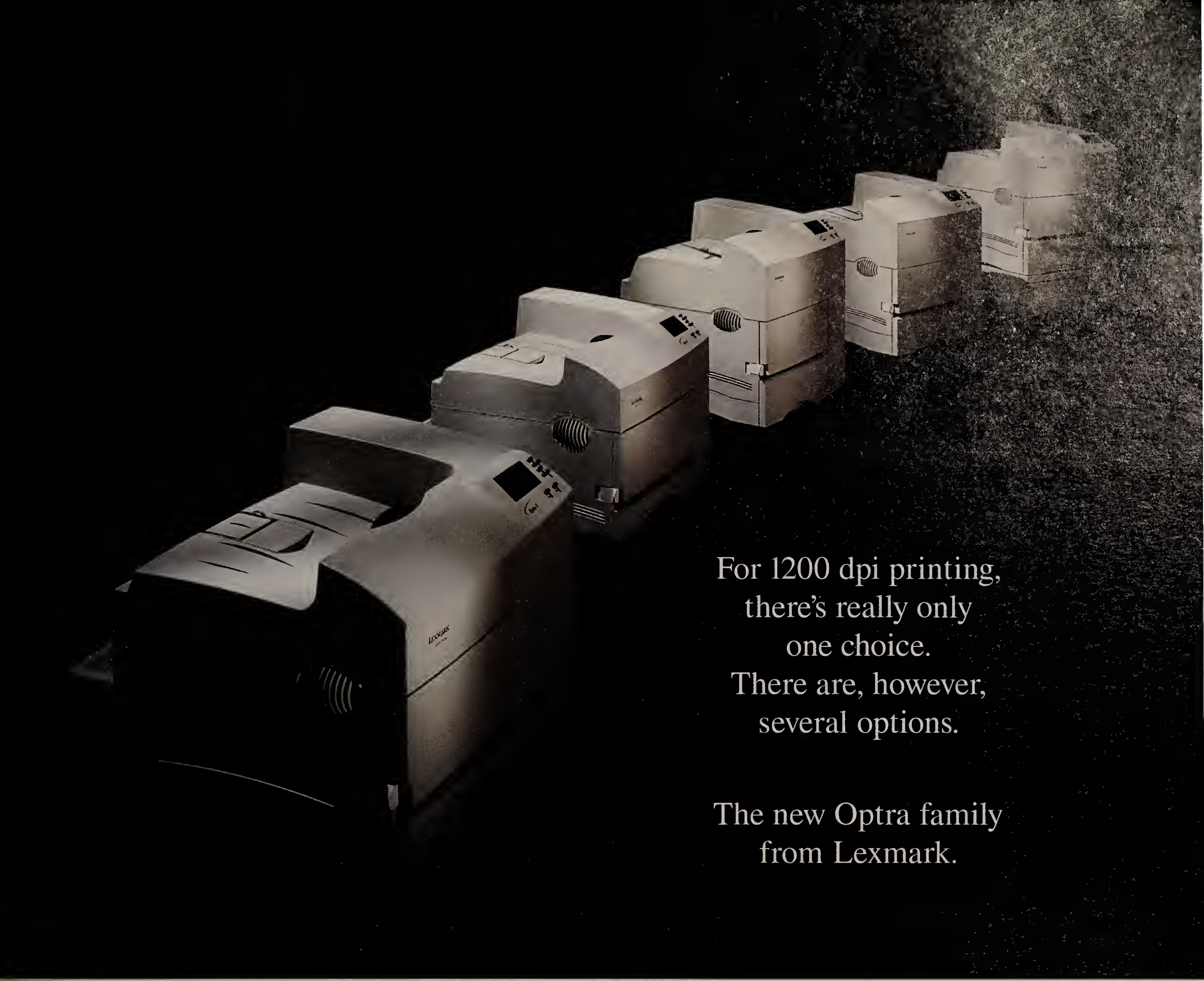
◆ "The telecommunications department serves as a consultant to recommend the most cost-effective solution that meets the customers' needs. The decisions are based on coverage requirements and long-term wireless planning."

A network manager who requested anonymity

NextWeek CyberSpeak Out!

U.S. District Judge Stanley Sporkin says that the Justice Department was too easy on Microsoft Corp. Is he right?

Responses due by 8 p.m. Thursday, Feb. 23. You'll get a T-shirt if we print your response. Please include your name, company and address.



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